

INTERNET, E-COMMERCE, AND
TELECOMMUNICATIONS MARKET OPPORTUNITIES
FOR U.S. SMALL- AND
MEDIUM- SIZED BUSINESSES

EXPORT IT LATIN AMERICA

HIGHLIGHTING ARGENTINA AND BRAZIL



U.S. DEPARTMENT OF COMMERCE
International Trade Administration
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U.S. DEPARTMENT OF COMMERCE
International Trade Administration
Trade Development
Technology and Aerospace Industries
Office of Computers and Business Equipment / Office of Telecommunications
June 2000

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Information on the Office of Computers and Business Equipment can be found at <http://exportIT.ita.doc.gov>.

Information on the Office of Telecommunications can be found at <http://telecom.ita.doc.gov>.

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FOREWORD

This report describes and analyzes the trends, key issues, and events in telecommunications, Internet and e-commerce adoption in Latin America, highlighting Argentina and Brazil, to create a framework from which U.S. small- and medium-sized enterprises (SMEs) can make educated business decisions about entering these markets. The report analyzes the status of telecommunications liberalization, competition in telecommunications services, and the deployment of new telecommunications technologies, and how these changes are affecting the adoption of the Internet and e-commerce. It also analyzes economic, cultural, historical, and political factors influencing the adoption of information, Internet and e-commerce technologies. The report highlights information and market opportunities relevant to U.S. SMEs in the information technology (IT) and telecommunications industries. Suggested market entry strategies for smaller firms, U.S. Department of Commerce and other resources to assist U.S. firms in market entry endeavors, and contacts in the United States and Latin America are provided.

The report is based on market research and analysis undertaken in Latin America in April 2000 by international trade specialists from the U.S. Department of Commerce International Trade Administration's Trade Development division: Danielle Kriz with the Office of Computers and Business Equipment and Elizabeth Farrand with the Office of Telecommunications. They interviewed software, Internet, and telecommunications equipment and services producers, trade associations, industry analysts, and government officials in Buenos Aires, Argentina; and São Paulo, Brasilia, and Rio de Janeiro, Brazil. The work was actively supported by the International Trade Administration's U.S. and Foreign Commercial Service (US&FCS) market specialists in the two countries. Information gathered from on-site interviews is supplemented with data from market research firms and an extensive review of available literature.

This effort was carried out as part of the U.S. Department of Commerce Market Development Cooperator Program (MDCP), under grants awarded to the Virginia Economic Development Partnership (VEDP), the New Jersey Institute of Technology (NJIT), and North Carolina's Kenan Institute. The MDCP is a competitive matching grants program that builds public/private partnerships by providing federal assistance to nonprofit export multipliers such as states, trade associations, and chambers of commerce that are particularly effective in reaching SMEs. These awards help the start-up costs of export marketing ventures, with the Department of Commerce playing an enabling role. These MDCP awards assist the VEDP, the NJIT, and the Kenan Institute in their efforts to help Northern Virginia, New Jersey, and North Carolina IT and telecommunications SMEs compete internationally.

EXECUTIVE SUMMARY

Although the Latin American market for telecommunications and IT products and services, including Internet and electronic commerce (e-commerce) technologies, is less developed than some other regions, it is growing rapidly. Despite some challenges, the opportunities for U.S. firms are broad and varied. Argentina and Brazil offer U.S.-based telecommunications and IT small- and medium-sized enterprises (SMEs) excellent market opportunities.

After experiencing a financial crisis and economic recession late in 1998 and throughout much of 1999, the Latin American economies have begun to recover. Positive economic growth is projected for 2000. Latin American firms and governments are increasing their IT investments, and consumers are beginning to have greater disposable income to spend on more advanced telecommunications technologies, Internet access, and e-commerce.

Increased competition in telecommunications services in many countries is driving investment in leading-edge telecommunications technologies, lowering telecommunications costs for consumers, and facilitating more Internet and e-commerce use. This is largely due to recent or pending privatization and liberalization of telecommunications services markets. Investment in telecommunications infrastructure and related software has exploded. The wireless telecommunications segment is growing strongly, as countries look to more advanced wireless technologies to increase teledensity rapidly.

There is growing recognition in Latin America of the importance of IT, particularly the Internet and e-commerce, to improve productivity and international competitiveness. Governments in some countries, including Argentina and Brazil, are developing or implementing programs to help firms, schools, government agencies, and other organizations increase their IT investments. Many firms are eager to learn about the benefits that e-commerce can bring them and to purchase the technologies and services necessary for an on-line presence.

Relatively common use of the Internet in Latin America began only about one year ago and remains extremely low compared to the United States. Nonetheless, Latin America is the fastest growing Internet market in the world. Brazil has been the region's Internet "early adopter", although other Latin American countries, including Argentina, are catching up quickly. However, faster Internet adoption in the region is hindered by various factors, including low teledensity rates, lack of broadband technologies, high PC prices, and local telephone charges. Many industry participants and observers eagerly anticipate the wide rollout of Wireless Application Protocol (WAP)-enabled handheld devices, and believe this technology will become a popular means of Internet access there.

Brazil, Mexico, and Argentina could provide the greatest opportunities for e-commerce in Latin America, given their relatively large markets. Despite recent media hype, business-to-consumer (B2C) e-commerce is most markedly occurring only in Brazil. Hindrances to widespread B2C use are countries' low Internet penetration rates, cultural factors that keep people from purchasing on-

line, underdeveloped delivery systems, low credit card use, and low disposable income. B2C will continue to grow, but will take longer to gain a foothold than in the United States. Change will occur more rapidly in business-to-business (B2B) e-commerce, for which the region is better suited. In fact, although B2B e-commerce is still in its infancy in Latin America, its uptake is rapid.

Internet start-ups are emerging in Latin America, particularly in Argentina and Brazil. However, Latin American Internet start-ups are hindered by a lack of access to funding, to technologies necessary to execute ideas, and to trained and knowledgeable workers versed in the new Internet technologies. As a result, many Latin American Internet start-ups seek U.S. partners.

Greater competition in Argentina's and Brazil's telecommunications sectors and demand for new related technologies means huge market opportunities in these telecommunications equipment and services markets. Wireless technologies are particularly popular, especially those which support high-speed interactive data services in addition to voice. There is a large and growing market for U.S. Internet and electronic commerce technologies and services in both countries as well. Low PC penetration and teledensity rates, however, indicate that Internet access via other means will likely be common, implying a demand for mobile data services, cable television, wireless local loop (WLL), local multipoint distribution services (LMDS), multichannel multipoint distribution services (MMDS), and other Internet access technologies. As more and more organizations implement Internet and e-commerce strategies, there is a need for web site designers, and also for systems integrators to install, program, and connect servers to legacy infrastructures and to integrate web sites and back offices.

Despite the opportunities, the Latin American market poses many challenges to U.S. firms. The region has low average annual wages, an unequal distribution of income, and an uneven IT infrastructure. As economies just begin to recover from the financial crisis and economic recession, organizations as well as consumers have tight budgets to spend on new technologies. Market intricacies and differences in Internet and e-commerce adoption trends mean that some U.S. technologies may not succeed or might need to be modified accordingly. Less expensive or less cutting-edge technologies may also be appropriate. Market entry strategies must also be adapted to the local markets and may differ depending on which country is first targeted, due to business and cultural differences.

Industry experts interviewed in Argentina and Brazil stress that for smaller U.S. firms who want to do business in these countries, some form of local representation is essential. Options include setting up a local office; partnering with a large, established IT or telecommunications firm, systems integrator, or consultant already active locally; partnering with a like-minded Latin American IT SME with complementary skills and technologies; or using agents or distributors. Regardless of market entry strategy, a variety of organizations, both public and private, are eager to help U.S. IT and telecommunications SMEs find partners or representatives in Latin America.

CHAPTER 1: INTRODUCTION

When advancing into foreign markets, many U.S. information technology (IT)¹ and telecommunications companies often do not give strong initial consideration to Latin America. While the Latin American market for information technology products and services is less developed than some other regions, it offers many business opportunities for U.S.-based small- and medium-sized enterprises (SMEs)², whose leading-edge products and services are highly regarded and sought after there.

Although experiencing a financial crisis and economic recession late in 1998 and throughout much of 1999, the Latin American economies have begun to recover, and positive growth is projected for 2000. Latin American firms and governments are increasing their IT investments, and consumers are beginning to have greater disposable income to spend on more advanced telecommunications technologies, Internet access, and e-commerce.

The Latin American market for telecommunications and IT products and services, including Internet and e-commerce technologies, is growing rapidly. Latin America

lags behind some other regions in IT adoption and use, particularly in use of the Internet and e-commerce, but it is the fastest growing Internet market in the world. Governments in many Latin American countries are moving forward with telecommunications deregulation and are liberalizing trade policies and encouraging greater foreign investment. Countries such as Argentina and Brazil, which for many years experienced hyperinflation, have made aggressive and successful efforts to stabilize their currencies and economies.

Many Latin American countries are party to trade agreements that ease market entry for U.S. IT and telecommunications firms, such as the World Trade Organization (WTO)'s Agreement on Basic Telecommunications Services, which aims to allow foreign telecommunications service providers to compete freely and fairly in signatories' markets. Under the North American Free Trade Agreement (NAFTA), Mexico, the region's second-largest market, allows duty-free access for U.S. exports. In addition, the Free Trade Area of the Americas (FTAA) process, launched in 1994 at the first Summit of the Americas, has already produced some results. Negotiators have agreed upon business facilitation items, including customs and transparency measures to reduce commercial transaction costs, which are to be implemented this year. A second tranche of business facilitation items is currently being discussed, which will make it easier for companies to conduct business in the Western Hemisphere.³ In 1999, the member states of

¹In this report, the terms "information technologies" and "IT" will refer to computer hardware and software, including Internet and electronic commerce applications.

²For comparison purposes, it is important to note that definitions of "large", "medium", and "small" companies in Latin America differ from the typical usage of these terms in the United States. A "large" firm in Latin America would be similar in size or revenues to a "medium"-sized U.S. firm. "Small" firms in Latin America, referred to as "*PYMEs*" (for *pequena y media empresas*), are those with annual sales of less than \$100 million.

³In December 1994, at the first Summit of the Americas, President Clinton and 33 other democratically

the Organization of American States' Inter-American Telecommunications Commission (CITEL) concluded negotiation of a Mutual Recognition Agreement (MRA) for conformity assessment of telecommunications equipment in the Americas. Negotiations regarding implementation dates are ongoing.

Telecommunications sector privatization and liberalization have become well-established trends in the region. Investment in telecommunications infrastructure and related software have exploded. Both established operators and newly licensed telecommunications service providers are expanding their geographic coverage and range of service offerings to meet the requirements of their licenses or privatization agreements. There is a broad demand for telecommunications hardware and related software products that should help operators achieve these requirements and to strengthen their market position in anticipation of greater competition in the sector.

There also is growing recognition of the importance of IT, particularly the Internet and e-commerce, to improve productivity and international competitiveness. Governments in some countries, including Argentina and Brazil, have been pro-active in their view that adoption of the Internet and e-commerce is important for economic growth, and are developing or implementing programs to help firms, schools, government agencies, and other organizations increase their IT investments accordingly.

elected leaders from the Western Hemisphere committed to the Free Trade Area of the Americas (FTAA). Actual negotiations to create the FTAA were initiated by President Clinton and other leaders in Santiago, Chile, in April 1998 and are still underway.

Many firms are eager to learn about the benefits that e-commerce can bring them and to purchase the technologies and services necessary for an on-line presence.

Nonetheless, the Latin American market poses many challenges to U.S. firms, and critical issues limit the speed and breadth of the market's growth. A main factor is the unequal distribution of income. According to the Organization of American States, 39 percent of Latin America's population lives below the poverty line. In fact, in some countries, 10 percent of the population controls up to 50 percent of the national income. Average full unemployment is approximately 16 percent and the average annual per capita gross domestic product (GDP) is \$4,454.⁴

As with income distribution, the IT infrastructure is unevenly distributed. Overall, Latin America has a low teledensity rate – only 12 of every 100 Latin Americans have phone lines, as compared to 66 of every 100 residents of the United States. IT and telecommunications infrastructures, between countries as well as between regions within a country, vary from nonexistent to rudimentary to adequate to relatively well-advanced in some major cities. Latin America has no major Internet backbone, no major interconnection points, and few Internet access points. The low average annual income renders PCs and some other advanced communications technologies beyond the reach of much of Latin America's population. As a result, IT spending per capita is much lower than in the United States, and the use of leading-edge technologies and applications, namely the Internet and

⁴ All financial and economic figures in this report are in U.S. dollars unless otherwise noted.

e-commerce, is most likely to grow among a relative elite market segment that may quickly become saturated. The average Internet user in Latin America is 29 years old, employed, and has a credit card – which is not representative of the average Latin American resident.

IT Spending Per Capita, 1997	
Country	IT Spending Per Capita (\$)
United States	1,197.9
Argentina	68.7
Chile	65.6
Brazil	63.7
Venezuela	43.1
Mexico	38.6
Colombia	30.5

Source: International Data Corporation

The region is incredibly diverse and should not be approached as a single market. Latin America has more than forty South American, Central American, and Caribbean nations, each with a unique culture. In Brazil, which represents approximately half of the Latin American market, Portuguese is spoken, while Spanish is spoken in most of the other countries of the region. Further, each Spanish-speaking country speaks a slightly different version of the language, and cultural differences among the Spanish-speaking countries are vast. The markets demand products and services tailored to each language and culture.

In many cases, government regulations can impede foreign access to Latin American markets. Brazil, for instance, has mandated that fixed line telecommunications service providers procure equipment primarily from domestic

suppliers. Certification and homologation⁵ procedures can be time consuming and complicated, resulting in considerable delays for products' arrival to the marketplace and increased costs for imported products. In addition, many Latin American countries have complicated rules on foreign investment and partnering.

Many Latin American countries impose relatively high import duties on IT and telecommunications products, in strong contrast to the elimination of tariffs on IT and telecommunications products in many other countries around the world, including in Europe and Asia, undertaken through the 1997 Information Technology Agreement (ITA).⁶ Further, Argentina, Brazil, Paraguay, and Uruguay have created MERCOSUR (a customs union) eliminating tariffs on trade⁷ between MERCOSUR member countries and establishing a common external tariff (CET) on imports from third countries. Products shipped between MERCOSUR countries, therefore,

⁵ "Homologation" is an English translation of a concept which does not exist in the United States. It refers to official government recognition of certificates of conformity for telecommunications equipment. Homologation requirements are relatively common in Latin American countries.

⁶ The ITA calls for tariff elimination on a wide range of such products, including computers, software, electronic components, and networking and telecommunications equipment. El Salvador and Costa Rica currently are the only two Latin American countries to participate in the ITA, and they have begun to eliminate their tariffs on ITA products. The U.S. Government continues to work with U.S. industry to convince Brazil, Argentina, and other Latin American countries to join the ITA. For more information on the ITA, see the Appendix.

⁷ With the exception of some agricultural products. For more information on MERCOSUR, see the Appendix.

have a price advantage in terms of import duties over products imported from the United States. The CET on all telecommunications and IT products imported from non-MERCOSUR countries will average 16 percent maximum by 2006.⁸

A final and critical market access issue of specific concern to U.S. IT firms in Latin America is the lack of sufficient protection for intellectual property rights (IPR). Although many countries may have strong IPR laws on the books, enforcement can be spotty or inadequate.

Despite these challenges, demand for U.S. telecommunications and IT technologies in the Latin American markets over the next several years should continue to be quite strong and the market opportunities broad and varied for U.S. firms.

⁸Nonetheless, there is one positive benefit of MERCOSUR for U.S. exporters; in some cases, countries' tariffs will be lower under the CET than pre-MERCOSUR. For example, Brazil generally has had to lower its tariffs to reach the CET.

CHAPTER 2: OVERVIEW OF THE LATIN AMERICAN IT AND TELECOMMUNICATIONS MARKETS

Latin America's IT and telecommunications markets are undergoing rapid change and growth. Increased competition in telecommunications services in many countries, largely due to recent or pending liberalization of telecommunications services markets, is driving investment in leading-edge telecommunications technologies, lowering telecommunications costs for consumers, and facilitating more Internet and e-commerce use. Many organizations in the region are increasing their IT investments, spurred by growing recognition of the importance of IT use to improve productivity and international competitiveness.

Brazil, Mexico, and Argentina are Latin America's fastest growing markets in general, as well as for leading-edge technologies, and are the largest export markets in that region for U.S. telecommunications and computer hardware equipment manufacturers. Venezuela, Chile, Colombia, the Dominican Republic, Paraguay and Peru round out the top ten export destinations in Latin America for these U.S. exports.

The regional economic crisis affected the markets in various ways

Latin America experienced a regional economic downturn which began in late 1998 and continued through much of 1999. The global financial crisis and lower commodity prices had a dampening effect on economic growth in the region. In 1999, Hurricanes George and Mitch took their toll in the Caribbean and Central America as well. While Latin America's economies collectively grew almost five percent

in 1997, growth in 1998 was less than two percent, and growth in 1999 was negligible. This region-wide downturn, coupled with significant currency devaluations in several markets-- most notably an almost 40 percent devaluation in the Brazilian *real* against the U.S. dollar-- both lessened demand for U.S. exports and increased their cost in dollar terms relative to domestically produced goods. The Argentine economy was hit especially hard because of its close trade and investment ties with Brazil, since Argentina's peso is pegged to the U.S. dollar and was not devalued. Argentina's exports to Brazil, its largest export market, became relatively more expensive in that country, and demand for them slowed.

The recession affected Latin American telecommunications and IT industries and markets in different ways. Overall, telecommunications industries and markets were not largely affected. Telecommunications privatization and deregulation already had begun in many countries, and increasing competition continued to push telecommunications service providers to build out their networks rapidly, both wireline and wireless, and to invest in new technologies.

In contrast, the recession affected the IT markets more heavily. The growth rate of many Latin American organizations' investments in IT slowed during the recession. Budgets for IT spending tightened as foreign investment in many Latin American economies dried up. Both consumer purchasing power and domestic

demand fell. Government spending on IT decreased as well, since tax revenues declined and governments allocated more spending to strengthening local economies and addressing social issues.

The regional recession coincided with the entry of the Internet into Latin America,⁹ slowing its adoption. Firms had fewer financial resources to create an on-line presence, and consumers had less discretionary income for extras such as Internet accounts. Therefore, the recession also slowed the growth of business-to-consumer (B2C) and business-to-business (B2B) e-commerce.

But economic recovery has already taken hold

Most Latin American economies had begun to recover from recession by late 1999 and are expected to have positive growth in 2000. As a result, these trends in IT spending are slowly beginning to change. PC sales were up 12 percent in 1999 over the previous year and are expected to continue to increase. Firms are planning and allocating funds for more IT investments. Internet use is growing, as is B2C e-commerce. There is great interest in B2B e-commerce, and firms slowly are increasing their investments in electronic business technologies.

Latin America is the second fastest-growing market for U.S. software developers, second only to Asia. PricewaterhouseCoopers predicts software sales in Latin America, valued at \$3.5 billion in 1998, will grow 18 percent annually through 2002. Brazil currently is the largest Latin American software market, with sales of

\$2 billion in 1999, according to the U.S. Department of Commerce. Business process re-engineering is gaining the attention of larger Latin American businesses, and as a result, much of the demand will be for software to automate back offices and improve efficiency, namely enterprise resource planning (ERP) and customer relationship management (CRM) software. Many firms are starting to implement e-commerce strategies and, as a result, their demand for e-commerce software will also be high. However, in a region where six in every ten installed software applications are illegal copies, software piracy remains an important issue, dampening sales prospects for foreign suppliers and stifling creativity and growth in local software industries. Nonetheless, some countries, such as Argentina, Brazil, and Colombia, have taken the first steps toward strengthening their copyright laws and enforcement to protect software developers and speed the growth of e-commerce.

The growing use of IT products is, in turn, spurring increased spending on IT services. The International Data Corporation (IDC) valued the IT services market in Latin America at \$8.5 billion in 1998 and predicts it will grow to more than \$13.9 billion in 2002. Most IT services spending is for systems integration, reflecting the need to integrate front and back offices. IDC expects the systems integration market will double from \$1.3 billion in 1998 to \$2.6 billion in 2002. Data processing services, hardware and software installation and support, and information systems (IS) outsourcing are other growing IT services segments in the region. Companies in banking, financial services and manufacturing account for most IT services spending in Latin America, and IDC predicts these vertical industry markets will

⁹In stark contrast to the United States, where the introduction of the Internet to businesses and consumers has coincided with the longest economic boom in U.S. history.

continue to lead spending in the foreseeable future.

However, although Latin American firms understand the importance of IT to their productivity and competitiveness, their budgets remain tight. Many firms, particularly smaller ones, still do not have the resources to invest in IT. Further, it is difficult to obtain financing in Latin America. Bank loans are expensive, since interest rates are far above what is common in the United States. Governments of countries such as Argentina and Brazil, which have had histories of hyperinflation, are reluctant to lower interest rates for fear of setting off inflation. Industry observers further note that the wild economic swings of recent years have made it difficult for firms to think long-term. As a result, it may still be some time before many firms, particularly smaller ones, are able to plan for IT investments over the long-term.

TELECOMMUNICATIONS

There are an estimated 60 million main telephone lines in Latin America, for an average teledensity rate of approximately 12 per cent. However, investments are growing. Baskerville Communications (now the Informa Group) estimates that the number of main lines will surpass 80 million and average teledensity will reach 16 lines per 100 inhabitants by 2003.

Major changes in telecommunications throughout the region

Privatization of formerly state-owned telecommunications providers, liberalization of telecommunications markets, and greater competition have spurred growth in the telecommunications sectors throughout the region. Most countries in the region completed privatizing their national operators in the 1990s. The World Trade Organization (WTO)

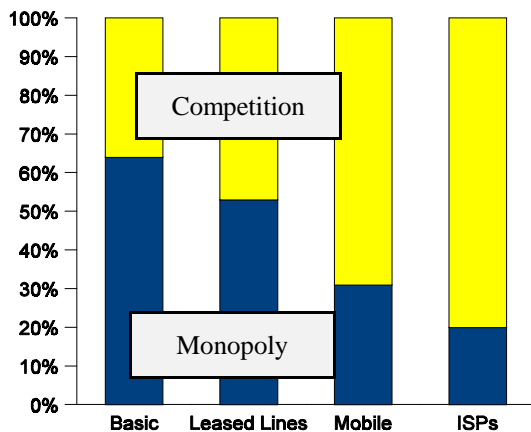
Agreement on Basic Telecommunications Services, which many Latin American countries have joined and are implementing, has lowered telecommunications trade barriers and opened markets. The Agreement has three components-- market access, national treatment,¹⁰ and pro-competitive regulatory principles.¹¹ It aims to provide foreign telecommunications carriers full access to participating countries' local, long distance, and international service markets via all network technologies – wireline, cellular, microwave, and satellite – either on a facilities basis or through resale. The Agreement also aims to ensure that foreign investors can acquire or hold a significant stake in signatories' telecommunications companies, or establish companies in those markets.

Privatization and greater competition are spurring growth in spending on telecommunications services and equipment. Basic services are being delivered to a greater percentage of the population, with greater choice and at lower cost for many consumers. Increased telecommunications use is driving demand for leading-edge telecommunications technologies and is facilitating greater Internet and e-commerce use.

¹⁰National treatment means that governments must accord foreign-owned firms the same treatment as they give domestic companies.

¹¹The pro-competitive regulatory principles are detailed in the *Reference Paper on Regulatory Principles* associated with the WTO Agreement on Basic Telecommunications Services and can be found at <http://www.wto.org/wto/services/tel23.htm>.

Telecommunications Services: Levels of Competition in the Americas, 1999



Source: International Telecommunication Union, *Americas Telecommunication Indicators 2000* (see Acknowledgment)

Service quality and coverage are increasing, in part due to performance and coverage criteria which are commonly incorporated as terms in the privatization of a state-owned telecommunications company or within the terms of a licensing agreement for a new operator. Examples of performance criteria include call completion standards and allowable number of billing errors. Examples of coverage criteria include providing service to a certain percentage of the population in certain geographic areas within set time frames (also referred to as “universal service” or buildout requirements). Some of these requirements are specifically aimed at the installation of public telephones or telephone centers in rural and poor areas to provide basic services such as local and long distance calls, message centers and operator assistance. Universal service requirements have helped expand Latin American countries’ telecommunications infrastructures into communities that generally do not attract investors because of high

development costs and low return on investment.

The regional economic recession barely dented growth in Latin America’s telecommunications sector, as recent and upcoming basic services liberalization continues to drive telecommunications growth and convergence in Latin America. While financial, regulatory, and political barriers still exist in the region, most countries have moved ahead with market liberalization. In 1998, telecommunications services revenues were over \$50 billion, and they are growing at about 20 percent annually.

New license awards for wireline and wireless (cellular, personal communications services or “PCS”, wireless local loop or “WLL”, local multipoint distribution services or “LMDS”) technologies, as well as cable television, will continue to spur network expansion and the offering of new services throughout the region. As the region’s economies pull into positive growth in 2000, greater discretionary income in conjunction with pent-up demand for telecommunications services will continue to spur telecommunications growth throughout the region.

Many changes in this region over recent years have driven growth in foreign exports and investment, although a wide range of regulatory environments remain. Chile’s telecommunications market is the region’s most liberalized and its long distance sector the most competitive in Latin America. Investments in Chile’s telecommunications sector are projected to run about \$700 million annually as the market grows an average 14 percent per year. In Mexico, the government auctioned off several wireless licenses over the last three years, including those for multichannel

multipoint distribution services (MMDS), WLL, and PCS, and plans to issue LMDS licenses in 2000. The Brazilian market is tremendously active, as competition is introduced in local and long distance voice services, and competition in data services heats up. The Brazilian government sold nine cellular licenses in 1998, privatized the national operator, TELEBRAS, and plans to issue PCS licenses in 2000. Both the privatized and newly licensed telecommunications operators are gearing up for full competition in late 2002. Argentina has begun to license competitors to Telefónica and Telecom Argentina, the two dominant telecommunications operators, and all operators are building out their networks in preparation for full market opening in late 2000. In Colombia, the national operator began competing with private long distance providers in late 1998, and auctions for nationwide PCS licenses are planned for 2000. In Peru, Telefonica del Peru's monopoly was terminated a year ahead of schedule, numerous competitors are entering the market, and the government issued a third PCS license and new fixed wireless licenses in early 2000. Venezuela's telecommunications sector is absorbing investments of approximately \$1 billion a year as the government plans to sell off a third national cellular license in 2000, and the monopoly on basic telephone services is set to end in November 2000.

The wireless sector is particularly strong

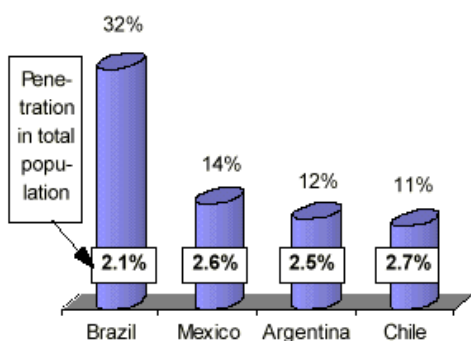
The wireless segment, in particular, has grown strongly in most countries in Latin America, as countries look to more advanced wireless technologies to increase teledensity rapidly. Companies use wireless technologies as a quick and cost-effective means to meet the geographic coverage and network buildout requirements that often are part of their license terms. WLL

and LMDS already are deployed to provide local voice and data services, primarily to the business market. In some areas, such as Rio de Janeiro and throughout Paraguay, the number of wireless lines already exceeds fixed lines, and other areas also will quickly achieve that distinction. Pre-paid services, which are attractive to consumers with limited discretionary income, and "calling party pays" policies have driven growth in the mobile wireless sector. Some industry observers estimate that approximately 70 percent of mobile wireless subscribers in Latin America use pre-paid services.

THE INTERNET

Relatively common use of the Internet in Latin America began only about one year ago and use in the region remains extremely low compared to that in United States. Approximately 5 percent of Latin Americans have Internet access, compared to 52 percent of the U.S. population. The region's low teledensity rate, only 12 lines per 100 people, means that nearly 90 percent of Latin Americans do not have the telephone lines necessary to connect to the Internet through dial-up connections. Further, the PC penetration rate is low. According to IDC, there were only 4.9 million Internet-enabled PCs in Latin America in 1999. In general, PCs are too expensive for most consumers, although some Internet Service Providers (ISPs) have begun to offer PCs on installment plans to make them more affordable and to encourage Internet use. Additionally, for Latin American households, using the Internet is expensive because users are charged by the minute for local calls.

Selected Latin American Countries: Internet Penetration in Upper and Middle Classes, 1999



Source: The Boston Consulting Group, 1999¹²

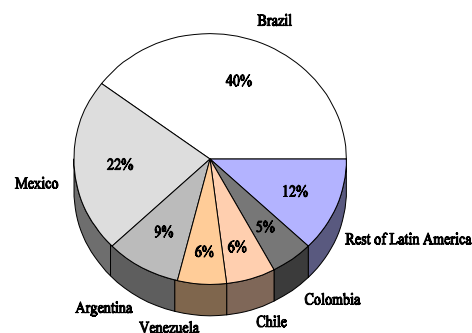
Nonetheless, Latin America is the fastest-growing Internet market in the world, and is viewed by many industry observers as the next major region of opportunity for the Internet. IDC estimates the number of Latin American Internet users will grow to 29.6 million in 2003, up from 8.7 million in 1999. While the past 12 months have been very important to the development of the Internet and e-commerce in the region, the next 12 months will be even more significant. Over the longer term, market experts suggest that the Internet's impact on the region could be greater than on a more mature economy like the United States, given the decades of protectionism and monopolistic regimes in some countries which have led to significant inefficiencies in their economies.

Brazil has been the region's "early adopter" and is much further ahead in Internet use than the other countries in Latin America. In fact,

¹²BCG's Internet penetration figures in this chart are from 1999, and thus may not match Internet penetration figures in the report text, which are the most recently available.

Brazil's Universo On Line (UOL) is the largest portal in the world outside of the United States. However, other countries in Latin America, especially Argentina, Chile, Mexico, and Venezuela, are catching up to Brazil quickly. According to IDC, in September 1999 Brazil had 40 percent of Latin America's total Internet population, followed by Mexico at 22 percent, Argentina at 9 percent, Venezuela and Chile tied at 6 percent each, and Colombia at 5 percent.

Share of Regional Internet Market*



Note: * measured by number of access accounts, as of September 1999

Source: IDC Latin America 1999, Internet Service Markets

Internet use is growing as Latin American business leaders increasingly recognize the importance of using it to increase productivity and efficiency and the need to make Internet-related investments. In addition, governments and universities are beginning to tap the Internet's potential for information and education, and consumers are signing up for Internet accounts as access prices fall. Latin America's market for Internet-related services was valued at \$1.4 billion in 1999 and is expected to grow 42 percent annually to \$8.1 billion in 2004, according to IDC. Demand is burgeoning for Internet access

services, both dial-up and broadband, as well as for value-added Internet services, such as e-commerce, which the growing number of ISPs and other access providers need to augment their offerings to compete in an increasingly crowded market. Reflecting this trend, IDC reported that e-commerce solutions and web-hosting services were the most popular value-added services in 1999. Large, particularly multinational, firms lead the way in Internet-related services spending.

ISPs, mostly local or regional, have been flooding into Latin American markets. Top-tier foreign ISPs have been striving to establish a pan-regional presence, either through establishing their own networks or by acquiring small local ISPs. Last year, PSINet bought 26 ISPs throughout Latin America to build its offerings to the business market. Spain's Telefónica, which owns telecommunications operators in several Latin American countries, rapidly has become a regional Internet power by purchasing ISPs in Brazil, Mexico, Chile, and Venezuela through its Internet arm, Terra Networks, which also recently announced plans to buy the U.S. portal Lycos. Regional telecommunications firms have been slow to move into the ISP business. In some countries, such as Brazil and Argentina, this is because of regulatory constraints. Experts expect these telecommunications operators to become increasingly competitive ISPs in the future, when those markets become fully liberalized and telecommunications operators are allowed to provide Internet service.

Despite the battle for market share, there is no one clearly dominant ISP in Latin America. One obstacle to a pan-regional presence is an uneven regulatory environment. Regulations differ from country to country and can be

difficult to understand or navigate where there are newly established regulatory agencies. Some countries have yet to develop rules about the provision of Internet services. Another challenge is poor infrastructure; Latin America lacks a major Internet backbone. As local sites are multiplying, however, local and regional backbones are being built.

Portals are being established at rapid rate throughout Latin America. Some offer a wide array of services, whereas others focus on particular industries, such as financial services, automobile sales, wedding planning, and real estate. Most Latin American portals, however, do not offer on-line payment transaction services as part of an e-commerce solution. New York-based StarMedia is competing with other leading firms, including Brazil's UOL and Spain's ZAZ, to become the gateway of choice for Latin American Internet users. Yahoo! and AOL have entered the market as well. PSINet launched a regional consumer-focused portal and access provider, inter.net, in March 2000 in several countries such as Argentina, Brazil, Chile, Mexico, Panama, Puerto Rico, and Uruguay.

The most successful pan-regional portals are those that offer content in Spanish and Portuguese and customize information for individual Latin American countries. However, industry insiders think that the pan-regional portals often lack enough local substance and have difficulty competing with local portals.

Internet demand is spurring a local Internet industry

Money is flowing into emerging Internet start-ups in the region, particularly in Argentina and Brazil. In fact, venture capital firms, many of them foreign, are setting up in Buenos Aires,

São Paulo, and other major cities. In many cases, Brazilian start-ups can focus exclusively on the Brazilian market because of its sheer size. In countries outside of Brazil, single markets often are too small to support start-ups. In these countries especially, venture capitalists seek regional ideas that can reach Latin America's millions of Spanish speakers.

However, Latin American Internet start-ups have many handicaps. Despite the influx of venture capital, new firms lack funding. IPOs are rare, interest rates on bank loans are prohibitively high in most countries, and banks in Latin America tend to be leery of start-ups. In addition, most Latin American start-ups have ideas but lack the hardware, software, and technical knowledge to successfully start a business. In addition, lack of talented management and quality staff limits many firms' growth. Because the Internet is so new in the region, few people are familiar with its technologies or have relevant experience. Firms in the industry report difficulties hiring qualified teams at the necessary pace. For all of these reasons-- access to additional funding, access to technologies necessary to execute ideas, and access to trained and knowledgeable people-- many start-ups in Latin America actively seek U.S. partners.

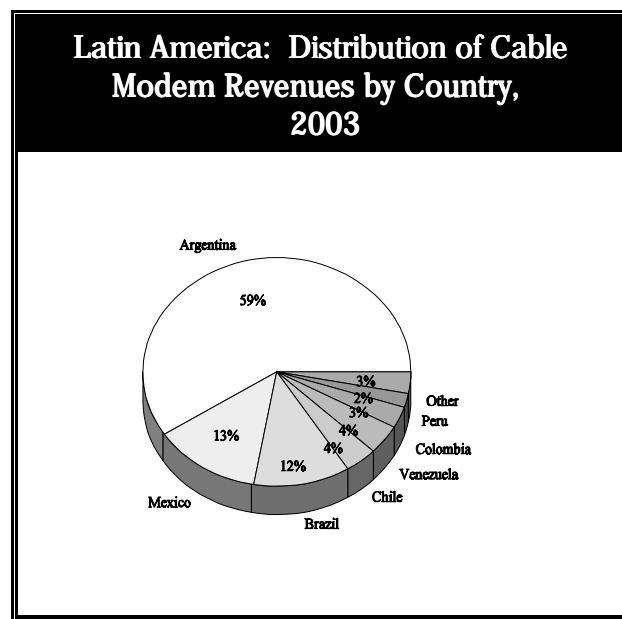
Broadband Internet just entering the region

The overwhelming majority of Latin America's Internet access, both business and residential, is via basic dial-up. Broadband Internet entered Latin America in 1998, as Internet access technologies including cable, digital subscriber line (xDSL), integrated services digital network (ISDN), and wireless were tested or launched commercially in some of the region's top markets. However, offerings are very limited, and it remains unclear how quickly broadband

Internet access technologies will be deployed in the region or which technologies will be most prevalent in the future.

Currently, Internet over cable television infrastructure is the predominant broadband technology used for residential service, but subscribership is apparently relatively low. Most cable operators' networks have not been upgraded to support Internet over cable and the service is restricted to certain neighborhoods of major cities. Further, most access currently offered is one-way, which many customers dislike because of the additional cost for a dial-up line to upload information. In addition, prices for cable modems and subscription fees are too high for most consumers.

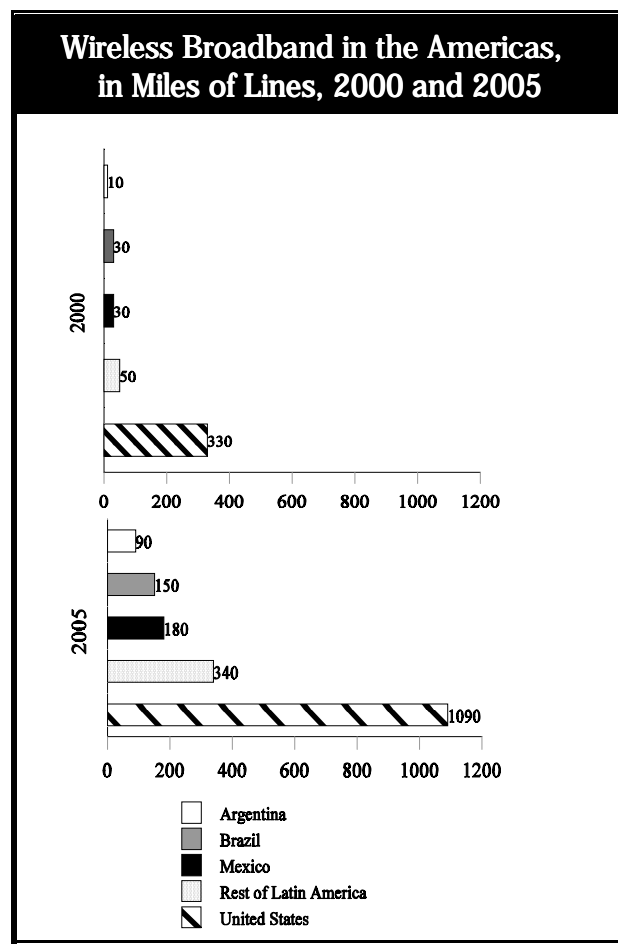
Nonetheless, some market research firms expect Internet over cable to take off in the region. The Strategis Group estimated that Latin America's cable modem market was \$23 million in 1999 and expects it will grow to \$740 million in 2003. During this period, it expects the installed cable modem base will grow from 54,000 to 1.2 million units. However, like most of Latin America's IT sector, deployment of cable modems will be very fragmented, with medium-term growth focused in densely populated, wealthier urban areas such as the affluent neighborhoods in Buenos Aires, São Paulo, Rio de Janeiro, and Mexico City. Although some telecommunications operators are testing xDSL and ISDN in the larger cities, these technologies are not yet widely used.



Source: The Strategis Group

Demand for wireless broadband is high

Because of deficiencies in the wireline infrastructure, demand for fixed wireless broadband in businesses is high and many firms eagerly await the technologies, which are being launched commercially in a few major cities. The Strategis Group predicts revenues for fixed wireless broadband could reach \$2.5 billion annually in the region. Some of the major companies in this sector include Velocom, which is offering (or soon plans to offer) fixed wireless service to small firms in Brazil, Argentina, Colombia and Peru; Diginet America (Diveo), which is offering fixed wireless services in Buenos Aires, Bogota, and São Paulo (with plans to launch commercially in other Brazilian cities), as well as in Panama, Peru, and Uruguay; and Winstar and other firms.



Source: Convergencia Telemática

There is much anticipation for wireless Internet via WAP

As in the United States, wireless Internet currently is available only on a very limited scale, such as basic electronic text messages for mobile phones. Many industry participants and observers eagerly anticipate the wide rollout of Wireless Application Protocol (WAP)-enabled handheld devices, which were introduced in the region in early 2000. They believe Latin America is an excellent market for WAP products, which can transmit and receive data, graphics, and voice. Since the low wireline and PC penetration rates make traditional dial-up Internet access difficult, unlike in the United

States, most Latin Americans cannot access the Internet regularly via PC and would welcome other alternatives. Latin Americans also are known for their affinity for mobile communications devices. In fact, the growth in mobile phones in Latin America is triple the PC growth rate.¹³ Many Latin American wireless operators are investing in WAP technologies and allying with WAP content providers in anticipation of wide adoption of this technology. Observers believe Internet over WAP-enabled devices will quickly become very popular in Brazil.

ELECTRONIC COMMERCE

E-commerce revenues in Latin America are predicted to grow quickly. Given the fragmented nature of the Latin American market and the vast gap in income distribution, growth of e-commerce will differ among countries – as well as regions within each country. These differences will present U.S. companies with a range of challenges. Brazil, Mexico, and Argentina could provide the greatest opportunities for e-commerce given their relatively large markets and high Internet penetration. The smaller and poorer countries in the region are far from adopting e-commerce and will continue to lag behind the rest of Latin America.

Despite recent media hype, Jupiter Communications estimates the total value of Latin America's B2C e-commerce purchases was only \$194 million in 1999. B2C electronic commerce is most markedly occurring only in Brazil. Many B2C companies in the region have received venture capital and other

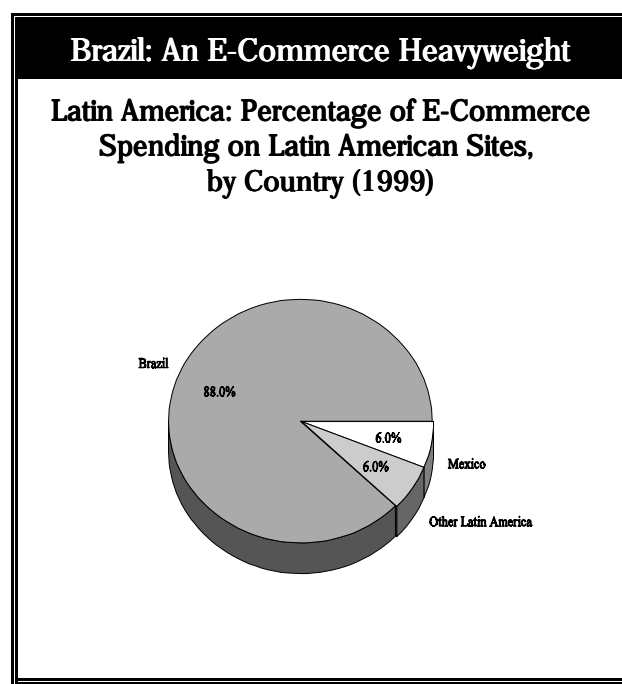
financing, but most are not making any profit nor are they making many sales. In the United States, most B2C firms lose money as well – but many of them do have relatively strong sales. Industry analysts state B2C will continue to grow in Latin America, but will take longer to gain a foothold than in the United States. Jupiter Communications predicts that Latin American B2C sales will reach \$8.3 billion in 2005.

Latin America: B2C On-line Spending, by Country (in Millions of \$)		
	1999	2005
Brazil	\$121	\$4,256
Mexico	\$25	\$1,542
Argentina	\$15	\$1,094
Chile	\$7	\$312
Venezuela	\$4	\$348
Peru	\$5	\$164
Colombia	\$7	\$336
Other	\$8	\$277
Total	\$194	\$8,330

Source: Jupiter Communications

As in many other markets globally, change will occur more rapidly in B2B e-commerce, for which the region is better suited. In fact, industry observers discuss B2B as the next big trend, and the uptake in B2B e-commerce in the region is rapid. In the United States, B2C e-commerce preceded B2B by approximately two or three years. In Latin America, the lag between the entry of B2B and B2C was only about one year.

¹³Some people expect WAP's popularity in Latin America to be similar to that in Europe, which also has low PC penetration rates.



Source: The Boston Consulting Group, 1999

Reasons for slow B2C uptake

Some reasons for the sluggish uptake in B2C e-commerce are cultural. Experts interviewed in both Brazil and Argentina point out that Latin America generally is not a “consumer culture”-- as opposed to the United States, where advertising is pervasive and sophisticated. In addition, other cultural factors lead to a reluctance to buy on-line. Many people claim that, in general, Latin Americans’ first tendency is not to trust others until proven otherwise, perhaps making them unlikely to conduct transactions over the Internet. Many people prefer “face-to-face” transactions and are accustomed to price haggling. Further, people are not accustomed to remote buying and selling and therefore are suspicious of purchasing goods “sight unseen.” This stems partly from logistics. Latin America’s mail service historically has been unreliable, so purchasing items via catalog is not as common as in the United States.

In fact, the underdeveloped delivery systems in Latin America-- there are few major highways, and postal systems, delivery companies, and couriers often are unreliable or inefficient-- is another factor slowing B2C e-commerce growth.¹⁴ In the United States, an efficient delivery system was in place before the arrival of e-commerce. In Latin America, e-commerce is pushing the development of delivery systems, but prices for delivery remain high by local standards.

It is estimated that 74 percent of Latin America’s B2C e-commerce purchases go to firms located outside the region, primarily in the United States. As a result, customs regulations and import tariffs often delay the arrival of purchases or make them prohibitively expensive. In some cases, customers must travel to a main international airport to clear their purchases through customs. However, some technologies are being developed and implemented to address these needs, such as new technologies which inform shoppers at the time of purchase how much they will owe in import duties and other taxes.

Credit card use in Latin America is low and the credit industry is underdeveloped. In some countries, such as Argentina, consumers distrust the banking system and thus other e-commerce payment means, such as bank debits, are not an option. Therefore, purchases in most countries are paid for off-line. However, Brazilian banks have very sophisticated on-line platforms and have arranged to let consumers link Internet purchases to their bank accounts. Those people who have credit cards, however, often hesitate

¹⁴In Brazil, one interviewee told of waiting three months for delivery of a compact disc ordered through the Internet.

to use them on-line. Real and perceived security issues, such as concerns about credit card fraud, also hinder greater e-commerce use.

Finally, and very importantly, Latin American consumers simply do not have a lot of disposable income. The economic recovery is still nascent and individuals, as well as firms, must become more financially secure before e-commerce will take off.

B2B is already the big new trend

B2B e-commerce is still in its infancy in Latin America, but is expected to grow quickly. Observers state that Latin America is more suited to B2B e-commerce than for B2C. Many of the issues hindering B2C, such as low credit card use, high local phone charges, and cultural issues, are less important for B2B transactions. Total B2B sales were \$1.9 billion in 1999, according to the Gartner Group, which predicts the total will reach \$124 billion in 2004. Forrester Research estimates that the B2B sector will account for 93 percent of total growth in Latin American e-commerce in the next four years. Even in the near term, experts expect much more activity in B2B six to twelve months from now.

The most intensive users of B2B are large, globalized industries, particularly local branches of foreign multinational corporations. For example, Volkswagen's plants in Argentina, Brazil, and Mexico use the Internet to link with their suppliers, as does the Argentine oil company, YPF.

Business portals are popping up for many vertical sectors. For example, there are a handful of portals for the agricultural sector, as well as the automotive industry. However, these portals differ from those in the United

States in a significant way – payments are not transmitted electronically, but are made upon delivery. Even large U.S. multinationals are said to prefer to pay this way within the region.

CHAPTER 3: ARGENTINA

ARGENTINA 1999		
Population and GDP	Total Population (millions)	36.6
	GDP per Capita (\$)	\$8,257*
Main Telephone Lines	Total (millions)	7.4
	Per 100 Inhabitants	20.11
Cellular Mobile Subscribers	Total (millions)	2.5
	Per 100 Inhabitants	7
Telecommunications Revenue	Per Main Line (\$)	\$927*
Telecommunications Investment	Per Main Line \$	\$204*
Personal Computers	Total (millions)	3.6**
	Per 100 Inhabitants	10**
Cable TV Penetration	Total Subscribers (millions)	5.9
Internet	Total Users (millions)	1.4
	Per 100 Inhabitants	3.8

Source: International Telecommunication Union *Americas Telecommunication Indicators 2000* (see Acknowledgment), U.S. Department of Commerce

*1998 Figure

**2000 Figure

INTRODUCTION

Argentina has one of the largest IT markets in Latin America, after Brazil and Mexico. According to the U.S. Department of Commerce, its market for computer hardware, software, and related services was valued at \$3.8 billion in 1999, while its telecommunications market was valued at \$12-13 billion. U.S. companies exported \$788 million in computer and telecommunications equipment to Argentina in 1999, up slightly from \$777 million the year before, despite the economic recession. These exports are on pace to grow considerably in 2000. As of May 2000, U.S. government statistics indicated that their

value was up 62 percent from the same time in 1999. The computer market, valued at \$1.6 billion in 1999, is growing as prices fall, particularly for PCs. Argentina's software market was valued at \$460 million in 1999 and is expanding as well.

Argentina's economy was strongly affected by the regional economic crisis of the late 1990s. Its export sector was depressed by Brazil's devaluation of its *real*, particularly since nearly a third of Argentina's exports have gone to that

country in recent years.¹⁵ In fact, Argentina's gross domestic product (GDP) contracted in 1999 by approximately 3 percent. As a result of the recession, organizational budgets were constrained, leading both private firms and government agencies to forgo spending on many areas, including IT. The recession also suppressed consumer discretionary income, which in turn slowed growth in the adoption of the Internet and e-commerce.

However, like other Latin American countries hit hard by that financial crisis, Argentina gradually is recovering from the recession. Regional experts predict a return to modest GDP growth, estimated at 2.5 to 3 percent, in 2000.

Argentines are pro-technology

Argentina's relatively high GDP per capita, nearly \$10,000, is one of the highest in the region, and gives the population relatively strong purchasing power compared to neighboring countries. The population, concentrated in Buenos Aires, is highly literate and is considered fairly technology-savvy. Many Argentines in the upper-income brackets, including managers of larger firms, travel widely. As a result, they know the technologies available abroad for both business and consumer use, are highly receptive to leading-edge technologies, and expect a high level of related services. In fact, some industry observers state that providers of certain data transmission technologies consider the country

a great test market and roll out new products and services in Argentina before expanding to other parts of Latin America.

Despite its third-place market ranking in Latin America and the lingering recession, Argentina is the leading country in the region in terms of potential to absorb IT-- including the Internet. It has one of the most modern telecommunications networks in Latin America. The penetration rate for cable television, 55 percent of Argentine households, compares favorably to the U.S. rate of 67 percent. The computer penetration rate, 10 percent of the population, is higher than that of the region's largest market, Brazil (7 percent).

But lag the United States in deployment

Nonetheless, Argentina lags the United States in the deployment of many information technologies. According to IDC, IT spending per capita in Argentina in 1997 was \$69, compared to \$1,200 in the United States and \$470 per capita in Western Europe. PC and Internet use are not common in daily life. The 10 percent computer penetration rate is one fifth that of the United States. At the end of 1999, fewer than 4 percent of Argentines had Internet access. Computer use in Argentina's educational system also is very low, although it is growing.

In the business sector, all U.S.-based firms' Argentine offices, most large and medium-sized, and even many small Argentine firms, reportedly have basic IT infrastructures in place, including local area networks (LANs) and on-line access, although smaller Argentine companies with a handful of employees may not. However, firms may not have many of their IT functions integrated, as described below.

¹⁵ In contrast to Brazil, which devalued its currency during the economic crisis to stimulate demand for products and services exports, Argentina did not devalue its peso, because it is pegged to the U.S. dollar. To unpeg the peso from the U.S. dollar would require a constitutional amendment.

and in protection of intellectual property rights

One issue of concern for foreign high-tech firms operating or selling in Argentina has been inadequate protection of intellectual property rights (IPR).¹⁶ Argentina participates in most major intellectual property organizations and treaties,¹⁷ and most of the country's IPR statutes are consistent with Western standards. In reality, however, serious deficiencies have existed regarding IPR protection. Enforcement of copyrights on computer software remains lax. Argentina's laws currently are under review by the government of Argentina to ensure that they fully meet international requirements.

IT investments were down in recent years...

IT investments by Argentine organizations of all types were depressed in recent years, mainly due to budgetary constraints brought on by the recession. As in many other countries, IT budgets were focused on Y2K remediation during 1999. In addition, according to some industry experts, Argentine firms withheld spending on IT during 1999 as they waited to learn the new government's IT-related policies (these policies thus far appear to be technology-oriented).

but recently have rebounded

As recessionary and other pressures have eased, Argentine firms are increasing IT investments to improve their competitiveness in terms of

cost and service. Industry observers note that larger local companies are relatively receptive to trying new technologies and often want to implement the latest technologies to leapfrog older solutions. In fact, even those large companies that use little IT often jump directly to cutting-edge options after deciding to invest.

Currently, many of these firms are prioritizing enterprise resource planning (ERP), back office solutions and integration of the front and back offices. Most ERP software used in Argentina is from SAP (Germany) and J.D. Edwards (United States), complemented by software developed internally or sourced from smaller local producers. As firms automate their back offices, they are beginning to purchase add-on modules for specific vertical industries or functions. In particular, customer relationship management (CRM) software currently is attracting attention and CRM investments are beginning to grow, as are investments in sales automation and help desk software. To augment customer service, a growing number of Argentine firms are implementing call centers. Many Argentine firms are very interested in, and some have begun to invest in, Internet and e-commerce-related technologies, although these investments must compete with their other IT spending priorities.

...although spending remains constrained by tight budgets.

Overall, IT budgets of local Argentine firms are still much tighter than those of U.S. firms and the multinational corporations (MNCs) active in Argentina. As a result, despite the growing desire to invest in IT, many Argentine firms simply cannot undertake large-scale spending on ERP, CRM, other related business applications, or on-line platforms and e-commerce technologies. In these cases,

¹⁶Argentina is currently on the United States Trade Representative (USTR)'s Special 301 Priority Watch List. This list details countries that lack adequate and effective intellectual property protection or market access for U.S. interests.

¹⁷Argentina adopted legislation in 1999 to ratify the World Intellectual Property Organization (WIPO) Copyright Treaty, and is also signatory to the GATT's Trade-Related Aspects of Intellectual Property (TRIPs) Agreement.

spending is low or incremental. Nonetheless, larger local companies often are forced to invest in IT solution to compete with the MNCs. A growing number of these firms are outsourcing their IT departments to save on costs.

Tight budgets constrain smaller Argentine firms' IT spending to an even greater degree. Although some smaller firms are interested in using application service provider (ASP) models to save money, ASPs are even less common in Argentina than in the United States and therefore currently are not a viable option. Many small Argentine companies view IT as a cost and not an investment, and so do not consider IT spending to be a high priority. An exception is the small but growing number of Argentine ".com" companies who do prioritize IT spending and outsource their business processes.

Telecoms and utilities are the early IT adopters

Argentina's telecommunications industry has been the leading adopter of IT among vertical industry sectors, particularly as competition has been introduced into that sector during the past decade. Many telecommunications companies use high-tech billing systems and are investing in new business-related software to increase competitiveness in preparation for full market liberalization and the entrance of new competitors in November 2000. Many Argentine utility companies, including electric and water utilities, as well as railroads, also are leading adopters of IT, investing in cutting-edge technologies and payment systems as they have been privatized.

But the financial sector is not

In contrast, Argentina's banking and financial services sector is underdeveloped in regard to

use of IT. Few banks have on-line platforms, none reportedly offer on-line banking, and many are not automated to any great extent. Argentine banks are relatively small, particularly compared to neighboring Brazilian banks. But more importantly, for historical reasons, many Argentines do not trust, and do not use, the banking system.¹⁸ As a result, banks in Argentina have not been pressured to automate. Industry observers estimate that fewer than half of Argentine residents use banks. Even then, it is usually for very simple banking relationships such as basic savings accounts, but not for checking accounts or credit cards (in comparison, most Americans have sophisticated banking relationships). Most Argentines receive their salaries in cash and conduct most transactions in cash.

Since the economy has been stable for the past decade, the number of people using banks slowly is increasing. Experts expect this trend will continue. A year ago, with the goal of strengthening Argentina's financial sector, the government implemented a new law requiring employers to pay employees through a bank. Enforcement of this law is increasing the use of banks, although many people continue to use only the most basic savings services.

Only very recently has the banking sector in Argentina begun to adopt IT. The industry is consolidating and local banks must invest in IT to compete with well-automated foreign banks,

¹⁸ During the rampant inflation of the 1980s, Argentines spent their paychecks as quickly as possible, or converted them into U.S. dollars. They did not put money in banks since the value would be quickly reduced by inflation. In addition, during that time, many banks folded overnight, leading people to distrust banks. This is in stark contrast to Brazil, where the banking sector invested heavily in IT over the same period. See Chapter 4.

particularly those from Brazil, that are established in Argentina. Some Argentine banks have automated internal processes, automating their branches, and installing ATMs. However, most local banks must still automate and re-engineer their back offices and invest heavily in IT to reach international norms.

Schools are not very networked

The use of IT in Argentine schools is limited. Private schools may have PC labs with Internet access but public schools do not for the most part. Some universities are beginning to offer graduate courses or distance learning over the Internet. Use of the Internet by educational institutions is described in the Internet section below.

And the government's use of IT is low

The government of Argentina is not a leading user of IT. Industry observers report that, in general, government agencies use outdated mainframe computers, many of which are programmed in COBOL. Although the government planned and initiated certain IT upgrades, many projects recently were canceled due to budget constraints. The national government's use of on-line technologies is nascent. Some agencies use web sites, but most are solely for information dissemination and do not provide interaction with the public. Some city governments are reported to be on-line as well.

But the government realizes the importance of IT

Despite its own constraints, the Argentine government realizes the value of IT to the economy and to Argentine organizations' productivity and competitiveness. In fact, industry observers report that the new

government of Fernando De La Rúa views the Internet as key to Argentina's global competitiveness and seeks to make the country a knowledge-based economy, particularly since Argentina has difficulty competing with neighboring countries, which have lower labor and other costs, in the more traditional heavy industries.

Recent government actions reflect a desire to encourage growth in the Argentine IT industry as well as greater IT use by organizations of all types. Its goal of getting the country on the "information superhighway" is one reason the government is encouraging greater competition in telecommunications. In 1999, the government mandated lower fees for telephone calls used to access the Internet. In February 2000, it announced the goal of having 4 million Internet users in Argentina by the end of its term in 2003. As part of this effort, the government wants to increase Internet access in schools and government use of Internet technologies, namely, to create an "e-government." The De La Rúa government reportedly understands the importance of SMEs in boosting employment, and has announced its intention to improve the productivity in SMEs through increasing their deployment of IT.

Despite these goals, due to budgetary limitations, the Argentine government currently is unable to fund many initiatives or programs or give firms tax breaks to encourage IT investments. Realizing these resource constraints, the government has solicited help from the private sector, as well as the U.S. government, in meeting these objectives. For example, in early 2000, the Argentine government and the U.S. Department of Commerce formed an initiative to work with the Argentine private sector to advance small

businesses' Internet use. The initiative calls for teaching, advising, and supporting Argentine SMEs on using the Internet and e-commerce to raise productivity, including using the Internet for international trade.¹⁹

The market is served mainly by foreign firms

Argentina's domestic IT industry is not well developed and local producers of certain technologies are few. With the exception of fiber optic cable and related components, no computer or telecommunications hardware is manufactured domestically. However, as Argentina's IT industry and market grow, investments by foreign IT firms in leading-edge IT industry segments is burgeoning. For example, Motorola recently announced plans to build a \$30 million software development center in Argentina.

But Argentine IT producers are growing

Nonetheless, Argentina has a small, but rapidly growing, number of local firms who develop software and provide a variety of services, including Internet services, web and e-commerce solutions, consulting, and systems integration. Privately financed "incubators" to support new suppliers also are growing.

However, lack of funding for IT start-ups is a problem in Argentina. Bank loans are expensive. The venture capital system is not as developed as in the United States, and IPOs are not common. As a result, firms actively continue to seek investments from foreign sources, including Wall Street.

Many small Argentine IT firms actively seek foreign partners, particularly from the United States. Although employees in many of these start-ups have business degrees or experience working for major multinational consulting firms, most Argentine start-ups with good ideas lack solid business plans and seek foreign partners to contribute this kind of expertise. In addition, Argentine start-ups typically focus on ideas and services, such as web portals or web site design, not technologies, and seek to partner with U.S. companies to acquire necessary technologies to carry out their ideas and be the first to market. Argentine firms often seek to leverage foreign partners to serve not only the Argentine market but the larger Spanish-speaking Latin American market as well.

TELECOMMUNICATIONS

Argentina's telecommunications market, valued at \$12-13 billion in 1999, is expected to continue to grow at about 10 to 15 percent annually over the next few years. Growth in cellular telephony is expected to continue to exceed that of wireline service; it is estimated that total cellular subscribership, estimated to be 2.5 million in 1999, will double in the next two years. Argentina's relatively low teledensity rate, 20 lines per 100 inhabitants, is less than half that of many European countries and far below the U.S. rate, leaving plenty of room for expansion.

A promising future

As a signatory nation to the WTO Agreement on Basic Telecommunications Services, Argentina committed to liberalize fully its telecommunications market by November

¹⁹ More information on this initiative can be found at <http://www.comercioUSA.org> or by contacting Silvia Yaber, U.S. Department of Commerce, Buenos Aires (contact information is in the Appendix).

2000.²⁰ As a result, many investments are occurring in this sector, since the speed with which new networks can be built will be of paramount importance for new competitors as well as incumbents. Further, Argentina's new Secretary of Communications, Henoch Aguiar, is a former telecommunications lawyer with a reputation for pursuing free market competition. Since taking his position, he has stated that his immediate priorities are building and maintaining telecommunications investor confidence and increasing competition in the sector. His first objective is to lower telecommunications user fees to drive greater telecommunications and Internet use, which he began by mandating a cut in both residential and commercial phone rates starting in March 2000. Secretary Aguiar has also focused on developing clear and consistent licensing, spectrum allocation, interconnection,²¹ and

²⁰Under the Agreement, Argentina committed to open by January 1, 1998, its market to foreign providers for the following basic services: domestic data and telex, domestic and international fax, paging, trunked radio, and leased circuits (with a preference given to the existing supplier until November 8, 2000), and to open its markets for all other basic telecommunications services by November 8, 2000. The only exception is for fixed satellite services, a market which Argentina will not open fully, although it will open the market for other satellite services. Argentina also committed to adopt pro-competitive regulatory principles delineated in the Reference Paper. For more information on this agreement, see the Appendix.

²¹Interconnection refers to linking suppliers providing public telecommunications transport networks or services, to allow the users of one supplier to communicate with the users of another supplier and access services provided by another supplier. Under the WTO Agreement on Basic Telecommunications Services, interconnection is to be ensured at any technically viable point in the network; provided under non-discriminatory terms, conditions (including technical standards and specifications), rates, and quality; in a

universal service regimes.²² The Secretary also recently announced his intention to attract \$4 billion in foreign investment when the domestic market opens fully to competition in November of this year.

Competition has grown slowly over the past decade

The Argentine government has introduced competition slowly into the telecommunications industry during the past decade. In 1990, the government privatized and divided the state-owned telecommunications monopoly²³ into two regional firms, Telefónica de Argentina (Telefónica) in the south and Telecom Argentina (Telecom) in the north. These two firms maintained a duopoly over Argentina's basic telecommunications services market until last year.²⁴

In November 1999, the government introduced limited competition in local, long distance, and international services. Telecom, Telefónica, and two consortia, Movicom (including Bell South of the United States) and Compañía de Teléfonos del Interior or "CTI" (including GTE

timely fashion; and provided under cost-oriented rates that are transparent, reasonable, and sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided. A dominant supplier will make publicly available the procedures for obtaining interconnection.

²²In fact, the government recently held a public consultation to solicit suggestions on improving licensing, spectrum allocation, and interconnection rates. Based on the comments received, the government currently is preparing a full regulation package.

²³ Empresa Nacional de Telecomunicaciones (ENTel).

²⁴ More than 300 independent telephone cooperatives also provide service where Telefónica and Telecom do not.

of the United States), were licensed to offer a full range of services on a country-wide basis.

The network and services have improved dramatically

Since the privatization process began in 1990, approximately \$20 billion has been invested in Argentina's telecommunications sector, transforming it from a poorly run tangle of inefficient networks to one of the most modern, innovative, and profitable sectors of Argentina's economy. The country now has a world-class, fully digital network.

Telefónica and Telecom have invested several billion dollars each in their infrastructures, which have grown significantly and rapidly. Since 1998, the two companies have accelerated the rollout of new wireline networks, largely in response to the new and anticipated competition. In 1999, Telefónica invested \$1.2 billion in its existing wireline and cellular networks and reported plans to install 100,000 new lines and provide service for an additional 300,000 cellular customers. Telecom invested \$860 million in 1999 and, among other projects, reportedly plans to invest \$60 million over the next three years in a basic wireline network in the province of Mendoza.

Privatization and competition also have increased substantially investments in new technologies and wireline capacity. Telecommunications operators are working to improve network speed and capacity as well as data transmission capabilities. The waiting time for a new phone line has dropped dramatically. As recently as five years ago, the average waiting time to get a phone line installed was 6 months. Now, observers state it takes closer to five days, or three weeks at most. Further, installation delays now usually stem not from

technical limitations or the lack of backbone, but strictly depend on a telecommunications operator's level of service.

International and long distance telephone charges have fallen

The new providers, Movicom and CTI, have focused first on competing in the international and long distance telephony markets, where the infrastructure is already in place and the cost of entry is lower than for local services. As a result, prices for international and long distance telecommunications services have been the first to fall. In fact, international telephone rates have dropped considerably, in both the business and consumer markets, to approximately 35 cents per minute for calls to the United States.

In contrast, competition in local service has just started and, so far, remains confined to the business market, where local rates have begun to drop. Residential local phone rates have not fallen measurably. As competition increases, particularly after November 2000, local residential prices are expected to decline as well.

Room for improvement remains...

Despite this progress, many observers note that room for improvement remains. Telephone charges still remain relatively high, especially compared to neighboring countries, and contribute to the high cost of doing business in Argentina. Relatively expensive local phone calls also make Internet use cost-prohibitive for many households.

Many industry participants claim there are problems with government oversight and regulation, namely in interconnection and universal service regulations, making it difficult for new service providers to compete against

the incumbents. Some industry participants claim that Telecom and Telefónica leverage their dominance in interconnection negotiations in an attempt to slow competition, and that the government is ineffectual in enforcing interconnection policies. Industry participants also state that the universal service policies, aimed at expanding telephony service to low income and rural families and increasing public phone availability, are not effectively administered. The previous Administration's universal service policy called for all telecommunications providers to pay a 0.5 percent tax to help build out the network. The funds collected went to the general treasury and were then supposed to be passed to the regulatory agency, the Comisión Nacional de Comunicaciones (CNC), to fund universal service objectives. However, budget constraints apparently limited distributions to the CNC, hindering the agency's ability to implement its universal service objectives.

But competition will ramp up after full liberalization in November 2000

From November 8, 2000, all areas of Argentina's basic telecommunications market will be opened to unrestricted competition for both domestic and foreign providers. Licenses will allow new entrants to provide service in several different combinations: local and long distance, local only, or long distance only. There will be no quantitative limit on new licenses, although new market entrants will be required to make major investments.²⁵ Several

companies already have obtained licenses to provide a variety of voice services beginning in November 2000. Some industry analysts predict long distance phone rates will decline 20 to 40 percent and expect local rates will drop as well.

Until then, despite competition from Movicom and CTI, the incumbents Telecom and Telefónica are expected to continue to dominate the wireline market. Some observers speculate that Telecom and Telefónica may continue to remain relatively dominant after November 2000 and may not lose very much of their current business, although they will likely lose a share of the new growth.

Fiber optic cable networks are expanding

As part of the requirements for receiving a new license, new telecommunications operators must make infrastructure investments. As a result, investments in copper and fiber throughout the country will continue. At the same time, growth in Argentina's voice wireline market is leveling off as more operators invest in the rapidly growing cellular market.

Fiber optic cable already is widely used in Buenos Aires, and fiber optic networks continue to be expanded there as well as in other major urban areas. For example, Telecom recently installed fiber optic rings in several cities, including Buenos Aires and Córdoba, and a consortium including National Grid of the United Kingdom, Chilean carrier Telefonía Manquehue, and Williams Communications of the United States, recently announced a \$220 million fiber optic project in Argentina and Chile. Currently, the major telecommunications carriers are leasing fiber optic capacity from other carriers until they can build out their own networks sufficiently. Some

²⁵Within two years of receiving a license and prior to launching service, a new entrant must be able to provide services covering 35 percent of three local areas (a local area is defined as an area having a common area code). Within five years, the provider must cover 50 percent of these areas.

firms in Buenos Aires are taking fiber all the way to customers' premises.

Mobile Wireless: Cellular and PCS

Wireless voice services grew rapidly in the 1990s, and the forthcoming launch of Personal Communications Services (PCS) will bring greater competition and lower prices to the wireless sector. Argentina has the highest rate of cell phone penetration in Latin America. According to IDC, the country's cellular phone penetration rate is 13 percent, compared to 6 percent in Brazil and 4 percent in Mexico. The ITU reports that 26 percent of Argentina's total telephone subscribers in 1999 were also cellular subscribers. There were an estimated 4 million cellular subscribers in March 2000, and this figure is predicted to rise to 6.5 million in 2002. The cellular market was valued at slightly more than \$3 billion in 1999, and is growing 10 percent annually.

Four wireless operators compete for Argentina's cellular market: Unifon (Telefónica's cellular operator), Personal (Telecom's cellular operator), CTI, and Movicom. In preparation for the entry of new competitors later this year, the cellular providers are investing in new technologies. Personal recently received a significant injection of capital from its parent company, Telecom, to build out a TDMA network to fourteen cities, using equipment sourced mainly from Ericsson of Sweden. Movicom recently awarded a contract to Lucent Technologies to build a CDMA wireless network in the northern part of Argentina to expand coverage nationwide. Further investment is expected, but firms reportedly are waiting for the government's new rules on interconnection fees and universal service requirements.

Competitive pressure also has pushed providers to drop prices and promote products aggressively. "Calling party pays" billing systems have driven increased cellular phone use by lowering costs to the consumers. Pre-paid accounts also are very popular, and proved to be particularly important in acquiring and retaining subscribers during the recent recession. Pre-paid accounts are attractive to consumers with low incomes, because the up-front cost of service is low and the plans do not require credit checks. These plans are also attractive for operators in that the risk of non-payment is low, as are the related costs for administering an account, such as billing and collection. However, cost per minute is high in relation to contract subscriptions. Pre-paid accounts are so popular that approximately half of Telecom Personal's subscriber base is on pre-paid plans, according to the ITU.²⁶

Some market research firms state that Argentina's cellular market will continue its rapid growth, as the popularity of cell phones among consumers shows no signs of abating. Other observers, however, predict that cellular growth will soon taper off because operators may have saturated the market by going after customers in all economic brackets.

The launch of PCS is expected to occur in coming months. The four cellular operators have six licenses to offer PCS between them, which the government awarded in June 1999. Industry observers expect competition in cellular services to intensify and prices to fall with the launch of PCS, which should in turn spur demand for mobile services.

²⁶In many countries, this percentage is even higher; 85 percent of the subscribers to Telmex' (Mexico) cellular services are on pre-paid plans, according to the ITU.

Fixed wireless services

As in the wireline segment, Argentina's fixed wireless industry will be characterized by a type of staged competition until November 2000. Many new entrants have secured wireless licenses and are preparing to jump into the market after full liberalization. Wireless local loop (WLL) services have only recently been offered in Argentina. One firm, Velocom, currently offers WLL to smaller firms for data transmission. A handful of other domestic and foreign firms have licenses for WLL and local multipoint distribution services (LMDS), but have not yet begun service. Some telecommunications service providers plan to use these wireless technologies to extend their voice services to less densely populated areas of the country to meet their licensing requirements. Industry observers note that frequency pirating is a problem for wireless providers in general, and particularly for WLL providers. However, they expect this to become less of an issue since the new government has announced plans to re-evaluate and monitor spectrum allocation and usage. Until November 2000, providers may not offer voice over these networks and, until then, must confine WLL and LMDS to data transmission services.²⁷

Cable television

With 5.9 million subscribers, Argentina has nearly half of Latin America's cable television audience. In fact, its cable television penetration rate is nearly 60 percent and is the highest in the world outside of North America. The estimated annual value of the cable television market was \$3.5 billion in 1999.

Approximately 600 cable operators provide service in Argentina, although there is a significant trend toward consolidation. In 1999, the two dominant cable providers, Clarin's Multicanal and Cablevision, had approximately 1.5 million and 1.4 million subscribers respectively. The third largest operator, Supercanal, had approximately 500,000 subscribers.

Argentina's cable TV quality reportedly is not as good as in the United States. Large and small cable providers alike are moving to upgrade and expand their networks to meet customer demand. As a result, growth is expected in the market for cable television equipment and related technologies.

Industry experts at one time believed that cable companies' extensive networks would form an integral part of new basic telecommunications providers' plans to compete with Telecom and Telefónica. Many now reportedly discount the value of these cable networks for basic telecommunications, since large additional investments would be required to adapt the networks to this new purpose. Nonetheless, cable companies are participating in the two new basic telecommunications consortia, Movicom and CTI, and have other valuable assets to offer, not the least of which are their extensive client bases. Cable companies are beginning to offer Internet access on a very limited scale (discussed below).

Satellite

Argentina is one of the largest markets for satellite services in South America. Nahuelsat and Impsat are the primary satellite communications providers in Argentina, serving Telecom and Telefónica, data transmission companies, cable television companies, and the

²⁷WLL and LMDS for data are discussed further under 'Data Networks.'

satellite television providers. Although satellite television has yet to really take off in the country -- there are only about 13,000 satellite TV customers -- many in the industry believe that Argentina offers tremendous growth opportunities.

Fixed satellite services is the one area in which Argentina did not agree to open to unlimited competition under its WTO Agreement on Basic Telecommunications Services commitments. Nonetheless, under a 1998 U.S.-Argentina bilateral accord, U.S. companies receive national treatment and may offer a full range of fixed services, including direct-to-home (DTH) television and data transmission. Several U.S. firms, including Galaxy, Sky TV, and DirecTV, offer DTH television. Loral Orion delivers domestic and international satellite-based services throughout the country.

DATA NETWORKS

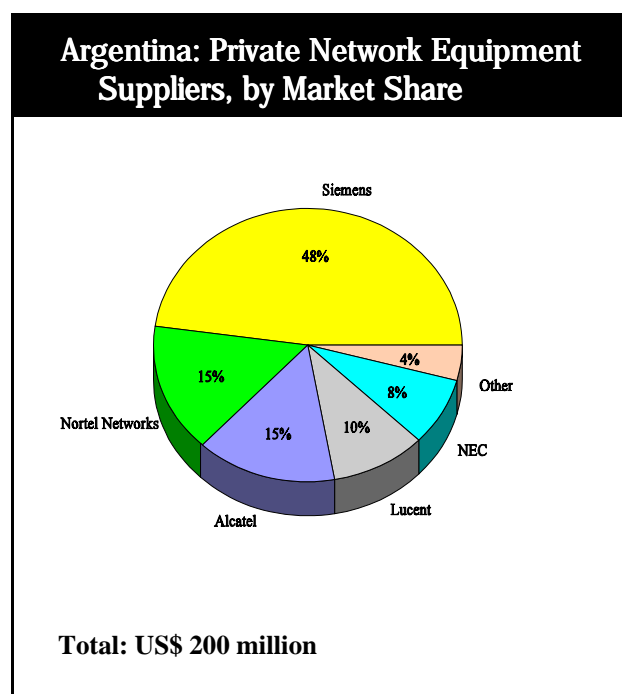
Argentina's data communications market reached an estimated \$500 million in 1999 and is expected to double within the next three years. Most users of data communications services are larger Argentine companies, including Argentina-based MNCs. Most Argentine companies use leased lines for data transmission. Due to increasing competition, data leased line costs have dropped considerably over the past six months.

Unlike basic voice telecommunications services, Argentina's data services market is open to full competition. Telecom and Telefónica must lease their networks to providers of private networks and data services. Industry observers state that data transmission service providers are relatively possessive vis-à-vis their networks. As a result, there is a great tendency for a provider to build out its own

network and not share it with other providers, leading to quickly growing capacity.

Although data networks use both frame relay and asynchronous transfer mode (ATM), the former is the most established data networking technology used in Argentina. In addition, a variety of providers are deploying Internet Protocol (IP) networks. Customers are just beginning to consider IP/virtual private network (VPN) technologies, and industry observers report that at least one multinational firm has begun to test IP/VPN.

Many data transmission service providers have obtained licenses to offer voice services and plan to bundle voice with their other offerings when the voice market opens to full competition in November 2000.



Source: Convergencia Telemática

Wireless technologies are growing in popularity for firms' data transmission needs

WLL is just beginning to be offered in Argentina. Velocom, among others, offers WLL Internet access for a flat rate, targeting smaller companies that cannot afford more expensive wireless data transmission and Internet technologies such as LMDS. WLL also is starting to enter the residential sector, usually home offices of journalists or other professionals who need "always-on" high-speed Internet access. Because of smaller firms' limited budgets, WLL may be the best wireless option for providing data transmission and Internet services to Argentina's SME sector for the foreseeable future.

A handful of companies, both domestic and foreign, have LMDS licenses, but have not yet begun to offer services. These providers plan to use LMDS to offer high-speed data, as well as various Internet services, to the corporate

sector. After the market opens to full competition in November 2000, providers are expected to offer switched voice over both WLL and LMDS, bringing opportunities for U.S. SME suppliers of these technologies and related services.

INTERNET

Popular use of the Internet in Argentina only became relatively common about one year ago. A major factor in this delayed growth in demand was the recent recession, which hindered consumers' ability to spend on extras, including the Internet. As a result, Argentina's Internet use is extremely low compared to U.S. levels. As in most countries, figures on Internet users change daily, but the International Telecommunication Union estimates that there were roughly 900,000 Internet connections in that country at the end of 1999. U.S.

Department of Commerce market specialists in Argentina estimate that, since each connection is accessed by more than one person, the total number of users is probably close to 1.4 million people. Thus, with a population of 36 million people, Argentina's Internet penetration rate is slightly less than four percent.

Internet adoption is growing rapidly as the country emerges from the recession. Prince & Cooke consultants found that Argentina's Internet use grew 43 percent in the last six months of 1999, although most of this was driven by users from higher income brackets. Many people believe Argentina is the most promising Internet market in Latin America, primarily due to its state-of-the-art telecommunications networks. In fact, many local industry experts believe that Argentina has the potential to become a regional hub for Internet-based industries and for the Spanish-speaking Internet. Argentina's government is

eager to increase the public's use of the Internet and announced in February 2000 its intention to have four million Internet accounts in the country by 2003, almost three times the current level.

Household Internet use is extremely low

Household Internet use in Argentina is extremely low due to various factors. Currently, there are only approximately two million home computers installed in Argentina. Relatively high PC prices have contributed to this low PC penetration rate. However, this situation is changing, since PCs now sell for less than \$1,000 (plus 21 percent VAT). In addition, many ISPs offer cheap PCs on installment plans, some of which require no payment for the first six months. These changes are increasing purchases of Internet-enabled PCs in Argentina.

Metered local telephone calls, which discourage web surfing, still impede greater Internet use. As of April 2000, a basic phone line in Argentina costs approximately \$25 to \$30 a month, plus per-minute usage fees. Unfortunately, reducing local telephone charges has been a lower priority than reducing long distance and international charges to date.

The Argentine government has taken some steps to lower telephone rates and encourage Internet use. In 1999, the government established low price 0600 numbers for reduced-cost Internet access; these calls are billed at a cheaper rate than regular voice calls. The aim was to cut Internet access costs up to 50 percent for individual users and 75 percent for educational organizations. Although this policy has boosted average connection times from approximately 15 to 24 minutes, Internet use remains low. Some Internet users complain

that the rate reduction is not absolute, varying through the duration of the call and offered only at certain times of day. Nonetheless, users see this policy as a positive initial effort.

While local telecommunications rates in Argentina are expected to fall after full market liberalization in November 2000, the government has made steps to lower local rates in the near term. It mandated a five and a half percent reduction in residential phone rates and 19.5 percent cut in commercial phone rates, which began in March 2000. These reductions are expected to spur home Internet use.

High Internet subscription fees also have hindered home Internet use. However, prices which once averaged \$35 to \$40 a month have dropped over recent months. Many ISPs offer a variety of cheaper options, at different increments with differing levels of service, such as \$9.90, \$14, or \$20 per month (plus 21 percent VAT). More recently, some are offering free Internet access. According to some industry observers, however, these cheaper services and free subscriptions offer limited service quality.

Until recently, another deterrent was the dearth of local and Spanish-language content on the Internet. This situation has changed dramatically over the past six months, as the number of local and Spanish-language providers developing content has grown rapidly. Argentina's ISPs are developing local content, and some leading international ISPs, including Yahoo! and AOL, have been expanding their local and Spanish-language offerings.

Internet use in schools

The large majority of public schools in Argentina do not have Internet access.

Although many private schools do, in these cases Internet access is usually limited to a lab or classroom dedicated to the use of PCs and the Internet. Experts report that a few universities, including the University of Buenos Aires, offer graduate courses on-line, but that university dormitories are not wired for the Internet.

Nonetheless, there is a trend toward using the Internet for education. One university reportedly is using the Internet to facilitate distance learning, which is particularly in demand in the rural areas. Canadian IT firms are entering this market, most likely because of their base of experience in implementing such solutions in Canada.

Business Internet use

Internet use in Argentine businesses is fairly widespread. Nearly all large firms and approximately 60 percent of SMEs have Internet access, although a number of the older, more traditional Argentine firms are not on-line at all. Many large companies have e-mail and Internet web sites. For the most part, these are static sites to establish an Internet “corporate presence” for marketing purposes and do not provide interactivity with customers, suppliers, or allow for e-commerce. Many firms realize that these static sites are insufficient and are looking to expand their functionality into e-business and e-commerce. This is more the case in larger firms, but is slowly filtering down to smaller Argentine firms. In fact, larger companies are starting to push their smaller suppliers to go on-line.

The Internet in rural areas– not yet

Compared to urban areas, the Internet is not used widely in Argentina’s rural areas. Basic telecommunications services are expensive and

PC penetration is low there. An exception is in the \$14 billion agricultural sector, where approximately 10 percent of Argentine farmers – usually those on larger farms – use the Internet to access information, such as weather updates and crop prices, and to obtain price discounts on products from large suppliers. As mentioned above, another exception in rural Internet adoption is in the education field, where the Internet is used for distance learning.

In general, rural communities connect to the Internet via copper or fiber cable routed through Buenos Aires, not directly by satellite. Observers expect that WLL and LMDS may be used in the future to connect more rural organizations and farms to a local backbone to increase Internet penetration, which could mean opportunities for small U.S. producers of these technologies.

Internet Service Providers

Argentina’s Internet industry is dominated by three large ISPs: Advance (a subsidiary of Telefónica), Arnet (a subsidiary of Telecom), and Ciudad Internatet (part of the Clarins Group). Other large ISPs include PSINet, Sinctics, and Canopus. In addition, more than 200 smaller ISPs serve the Argentine market, many of which are small rural cooperatives operating networks for fewer than 300 users. As in other countries, the ISP industry in Argentina has been consolidating.

As more and more Argentine companies use the Internet, a corporate-focused ISP industry is emerging to serve their needs. As an example, PSINet has a megahosting center in Buenos Aires on which it hosts large firms’ web sites. PSINet also leases Internet access to many smaller ISPs who serve Argentina’s consumer market.

Although most ISPs serve the large Buenos Aires market, some ISPs are expanding into under-served areas outside of the capital. In addition, as the market becomes more sophisticated, ISPs serving niche markets are emerging. For example, some specialize in content such as medicine and legal services. All of these ISPs seek the cutting-edge technologies which U.S. SMEs can provide.

Due to a dearth of local content in the past, all IP traffic used to go to the United States and back, which made a local Internet backbone less necessary. As local content increases, however, and more and more sites are hosted locally, firms are investing in local infrastructure and the Argentine backbone is growing. Telefónica recently announced plans to begin building an IP network.

Broadband Internet is not yet widely used

Most Internet access in Argentina is via slow dial-up modem. In the residential sector, dial-up is almost universally the access method, although broadband Internet is used to some degree by businesses. Demand for greater bandwidth is growing and technologies to offer it are being implemented. However, broadband technologies are in their infancy in Argentina, and it is unclear how fast they will be deployed or which ones will succeed. Broadband over existing copper (i.e. Internet over digital subscriber line or “DSL”) is not yet established in Argentina, although Telecom and Telefónica are testing ADSL and may begin to offer it later this year. However, the two companies must make significant investments to reconfigure and upgrade their networks to be able to offer DSL on a large scale. ISDN is not widely used at all, mostly due to the regulation that ISDN may not be offered for national communications within Argentina, but only for international links. This

policy reportedly has hindered the growth of virtual private networks (VPNs). ISDN may be used for national communications after November 2000.

Internet over cable television infrastructure is off to a slow and expensive start

Currently, broadband Internet to the home is being served exclusively by cable technologies. However, prices must fall further if Internet over the cable television infrastructure is to gain wider usage.

Internet over cable has been rolled out in some areas of Buenos Aires, although technical and financial issues continue to hamper more widespread adoption. Fibertel currently is the only cable firm offering high-speed Internet access over cable. Clarín’s Multicanal has been slower to roll out its service. DirecTV, the satellite services provider, planned to offer high-speed Internet access, but had not yet done so.

A major impediment to wider cable Internet use is the quality of the existing infrastructure. Argentine cable operators must upgrade their networks by replacing coaxial cable with hybrid fiber/coaxial cable (HFC) to enable two-way communications and high-speed data transmission. Fibertel reportedly claims that its Internet-capable infrastructure is expanding four percent a month, although some industry analysts claim the company does not appear to be moving as quickly as it could to meet demand. In addition, as major cable operators have expanded rapidly through mergers and acquisitions, cable television networks remain a patchwork of technically different systems which will require large investments in order to become capable of Internet-quality services. These expensive investments and upgrades will

preclude cable operators from lowering prices to subscribers and thus boosting demand.

The other major impediment to wider use is cost. Relatively high prices for cable modem installation and cable Internet access render cable Internet too expensive for most Argentines. As of April 2000, cable modem installation fees were approximately \$100. One-way cable Internet was approximately \$50 a month, and two-way cable approximately \$100 a month. These monthly rates are on top of charges for basic cable itself, approximately \$40 a month.²⁸

One-way cable Internet is the most prevalent form of cable Internet access in Argentina, but the service appears not to be achieving a high acceptance rate. Uploads through the dial-up line are slower, but more importantly, users incur the additional costs of local telephone charges and dial-up Internet access charges. However, two-way cable Internet is only available in certain Buenos Aires neighborhoods and is therefore not yet an option for many subscribers.

Prices must decline further to drive broader cable Internet penetration. Some industry observers posit that because the major cable multiple system operators are controlled by larger conglomerates which also own ISPs, cable operators therefore have little incentive to create new competition to their related ISPs.²⁹ There is then little incentive to make the large

investments necessary to offer new Internet access services, such as Internet over cable. Some observers suggest that because only a few large cable operators dominate the market, there is little competition among them. Other industry observers believe cable Internet prices may come down in the future, although this remains to be seen.

Wireless Internet access

Some firms have begun to offer broadband Internet access using wireless technologies. Bell South was the first firm to offer Internet services, such as simple text, over regular cell phones, but some users report that the quality is not very good. In 1999, some wireless providers began offering Internet over WLL systems, and this is becoming popular among small firms and home offices. LMDS is another fixed wireless technology that some firms are planning to roll out to provide Internet access, in addition to traditional data transmission services, to larger corporate customers.

What about WAP?

Internet access using Wireless Application Protocol (WAP)-enabled cellular handsets is an area of great interest in Argentina. Many operators have been investing in infrastructure and content in anticipation of the rollout of these handheld devices in late 2000. People interviewed in Argentina believe the country is an excellent market for this technology, given the relatively high penetration rate for cellular services in conjunction with the low PC penetration rates and Argentina's appetite for Internet content. However, handheld units are expected to be relatively expensive when first released, and prices will most likely need to fall before WAP-enabled handheld devices are used widely.

²⁸In addition, basic cable charges are assessed a 10.5 percent VAT, and Internet cable services a 21 percent VAT.

²⁹For example, Cablevision is linked with Telefónica, which has its own ISP, and Clarins Multicanal is part of the Clarins Group, which also has an ISP.

Industry experts believe that Argentine cellular operators will not be competitive in introducing WAP services, given their lack of expertise, their focus on voice technologies, and the companies' relatively large size, which may preclude them from acting quickly. Although Japanese and European operators have taken the lead in pushing and adopting mobile WAP Internet, this could be an excellent opportunity for U.S. firms competing in this market segment. In fact, some start-up mobile Internet companies in Argentina are actively seeking U.S. partners in anticipation of a large and vibrant market for WAP technologies.

Argentina's Internet industry

Argentina has one of the most active Internet start-up industry sectors in Latin America, with a wave of such companies forming in the past year. A handful of Argentina-based venture capital funds, as well as foreign venture capital and private-equity funds, are funding these Internet start-ups, bringing a large amount of money into Buenos Aires. In fact, approximately ten to 15 large venture capital funds are in this city. Although venture capitalists are drawn to Buenos Aires' highly educated and sophisticated population, most are looking to fund regional ideas.

Most notably, Argentina is trying to leverage its high literacy rate to become Latin America's leading Spanish-language Internet content provider. This tactic appears to have worked so far. Argentina is the number one provider of Spanish content in Latin America, and is considered to be a mecca for new ideas and creative content. In fact, sites launched from Argentina usually are aimed at the entire Spanish-speaking population in Latin America. They need to be, since by itself Argentina does not have enough Internet users to support these

sites. In fact, venture capitalists active in Argentina, and in Spanish-speaking Latin America in general, usually only consider funding sites they believe will be successful regionally.

Despite the abundance of ideas, Argentine Internet firms often have difficulties producing or finding locally the necessary technologies with which to build their offerings. Thus, these companies must often source the necessary hardware, software, and patents for portal services from abroad, usually from the United States. These start-up firms continue to seek the cutting-edge Internet technologies which U.S. high-technology SMEs can provide.

ELECTRONIC COMMERCE

There are few reliable figures available on e-commerce in Argentina, but the sector is still quite small. Business-to-consumer (B2C) e-commerce is not yet very widespread, and e-commerce currently is restricted mainly to business-to-business (B2B). Some industry experts estimate that Argentina's use of e-commerce trails that of the United States by three to five years.

Both B2C and B2B e-commerce segments are growing, however, as increasing numbers of Argentine consumers and businesses go on-line. In addition, the government is eager for e-commerce to increase Argentina's productivity and has avoided creating laws to hinder its diffusion. In fact, as part of an agreement with the U.S. Department of Commerce in early 2000, it announced a commitment to "avoid imposing unnecessary regulations or restrictions on electronic commerce" and to follow the U.S. policy of allowing the private sector to lead in developing e-commerce markets and business practices,

with the government offering assistance and guidance when appropriate.

Business-to-consumer electronic commerce is only just beginning

B2C e-commerce use in Argentina currently is quite low. On-line retail sales were estimated to be worth only \$3 million in 1999.

Buenos Aires-based merchants have begun offering B2C services. In addition, many new Argentine B2C “.com” companies have emerged recently, including generalized B2C portals. Merchants are following similar global trends in first offering books, music, and collectibles for sale. For the most part, however, B2C vendors are selling relatively little merchandise and are not showing profits. Even B2C e-commerce markets that are quite common in the United States, such as for audio compact discs (CDs) and book purchases, are still fledgling in Argentina. Auction and trading sites like E-Bay and E-Trade have been copied, but will need more users to remain viable in the long term. Industry experts believe that B2C will take longer to become widespread and will have a much slower growth rate than was experienced in the United States.

There are various reasons for the extremely limited B2C e-commerce sector in Argentina, and some of these issues will take longer to be resolved than others. Few Argentines have PCs at home. In addition, because local telephone charges make Internet use expensive, Argentines who do have home Internet access are not inclined to surf the web and spend time browsing B2C e-commerce web sites.

Some impediments are also related to the system of payment in Argentina. Unlike in the United States, where approximately 700 million

credit cards currently are issued, Argentina's credit industry is relatively underdeveloped since there is very little credit card use in Argentina. Further, credit fraud protection is weak and not consumer-friendly. Risk for payment rests on the consumer, not on the credit card companies, and in any billing dispute consumers are responsible for the bill until the dispute is resolved. In addition, distrust of the banking sector and resulting low bank usage preclude the use of on-line payment technologies such as bank account debit.

Payment technology issues notwithstanding, the country is just emerging from a recession. Argentines have little disposable income and currently do not often spend money on extra luxury items, such as books and CDs. In addition, industry and market observers indicate that Argentina and Latin America generally simply do not have a strong consumer culture, as does the United States. Although Argentines may love to shop, most do not necessarily spend a lot on consumer goods. Other cultural issues impeding B2C e-commerce in Argentina are a strong preference for face-to-face transactions. In addition, Argentines are not accustomed to remote buying and selling and therefore are suspicious of purchasing goods “sight unseen”.

Argentina's relatively unsophisticated delivery system is another barrier to B2C e-commerce. Big U.S. courier services, such as UPS and Airborne, believe the Argentine e-commerce market has great potential and are entering the market, along with smaller local courier firms. However, these delivery services are relatively expensive and need to improve.

Despite these obstacles, B2C e-commerce in Argentina is a promising market sector.

Nonetheless, the B2B e-commerce sector will show even greater growth.

Business-to-business electronic commerce

Although B2B e-commerce is more widely used in Argentina than is B2C, its adoption again lags far behind that in the United States. Large Argentine firms are estimated to be approximately two years behind the level of e-commerce use of U.S. firms, and smaller firms lag even further behind. However, B2B e-commerce is a more promising growth area than B2C. A higher degree of trust exists between firms that have an established business relationship than between consumers and B2C web sites, most firms have and are comfortable using credit accounts, and interest in B2B e-commerce use is growing substantially among larger firms that understand how B2B can increase their competitiveness. Nonetheless, many traditional Argentine firms do not yet feel much pressure to invest in B2B.

In the past two to three years, some larger firms have begun to use e-commerce procurement, warehousing, and transportation technologies. In particular, car manufacturers and supermarkets, which have been using EDI, are moving to B2B e-commerce, as are some firms from other vertical industries such as the oil industry. B2B vertical portals are emerging as these firms transact more business on-line. However, although some Argentine firms use e-commerce to order from their suppliers, technological integration is far from complete. Payments usually are made through traditional channels, such as by invoice, and are not usually transacted electronically.

Few SMEs interact with other firms electronically. In fact, extranet use by SMEs currently is very limited and small Argentine

firms are very slow to get on-line. Industry representatives tell of one large Argentine firm that spent two years convincing its suppliers and partners to go on-line. Nonetheless, some MNCs are pushing their suppliers to get on the Internet and use e-commerce, and a few SME-focused B2B portals have emerged recently.

Further, despite their intentions, most Argentine companies currently face very tight budget constraints. Thus, investments required to get on-line and invest in B2B technologies also compete with other budget priorities such as investments in ERP software and integration of front and back offices.

CHAPTER 4: BRAZIL

BRAZIL 1999		
Population and GDP	Total Population (millions)	168
	GDP per Capita (\$)	\$4,675*
Main Telephone Lines	Total (millions)	27.8
	Per 100 Inhabitants	16.8
Cellular Mobile Subscribers	Total (millions)	15
	Per 100 Inhabitants	9.1
Telecommunications Revenue	Per Main Line (\$)	\$1,009*
Telecommunications Investment	Per Main Line \$	\$407*
Personal Computers	Total (millions)	12**
	Per 100 Inhabitants	7**
Cable TV Penetration	Total Subscribers (millions)	5
Internet	Total Users (millions)	8.8**
	Per 100 Inhabitants	5**

Source: ANATEL, International Telecommunication Union *Americas Telecommunication Indicators 2000* (see Acknowledgment), Boston Consulting Group, U.S. Department of Commerce

* 1998 Figure

** 2000 Figure

INTRODUCTION

Brazil is Latin America's largest IT market...

With a population of 165 million people, and eleven cities with a population over 1 million, Brazil is the largest and most industrialized nation in Latin America and the single largest IT market in the region. From 1994 to 1998, the Brazilian IT market grew nearly 19 percent annually, outpacing the 3 percent annual growth in Brazil's GDP during the same period.

According to the U.S. Department of Commerce, the combined computer hardware and software markets were valued at \$8.3 billion in 1999.

Brazil has almost half the main telephone lines in South America and one half of the region's computer market, with approximately 12 million computers installed. In 1999, the computer market was estimated to be \$6.3 billion. Lehman Brothers predicts the demand for computers to increase 30 percent in 2000. According to the York Group, Brazil is among the ten largest software markets in the world and has among the top five growth rates in this global market. The U.S. Department of Commerce estimated that Brazil's software market was valued at \$2 billion in 1999.

Strong economic growth has returned

Economic growth should spur demand for all types of IT and telecommunications products and services in coming years. Growth in Brazil's market slowed in 1999 due to the regional recession, which was sparked by the Asian financial crisis in 1998 and worsened by a nearly 40 percent devaluation of the Brazilian *real* in early 1999. The devaluation in particular had enormous implications for the Brazilian economy, since imports became very expensive. However, the recession's impact on the telecommunications sector was relatively slight due to the privatization and increased competitive pressures in the sector. Effects on the IT market were much greater, because firms had less discretionary income to allocate to IT purchases.

The Brazilian economy has pulled out of the recession, showing slightly positive overall growth for 1999 and stronger growth in early 2000. Analysts expect the economy to grow as much as 3.9 percent in 2000, and the IT and telecommunications markets should expand rapidly in 2000 and beyond. In addition, prices for telecommunications services to businesses and residences will fall as competition develops, further spurring demand for advanced Internet and e-commerce applications.

Government programs encourage Internet use and IT development

The Brazilian government has made a concerted effort to encourage Internet use by government agencies. The Brazilian tax agency has been a leader in adopting Internet technologies, and filing tax returns on-line is very common. The government is developing an electronic procurement system to be implemented in the first half of 2001, and another system by which citizens can pay any government-related

payments electronically. The government also is attempting to increase IT use in education, launching a program named ProInfo to put computers and Internet access in the public school system. The goal is to install 100,000 PCs in Brazilian schools in 2000.

The government works to support the Brazilian IT industry in various ways. In 1999, it established a three-year program offering attractive financing terms for small start-up companies in the IT field. This Brazilian National Social and Economic Development Bank (BNDES)-sponsored program has successfully launched six companies. In addition, the government-sponsored Softex program works through 20 centers throughout Brazil to develop the domestic software industry and to promote Brazilian software exports.

Brazil's government has not been very actively involved in establishing incubators, although there are several affiliated with universities that receive some government support. State and municipal governments, as well as some corporate interests, have created incubator sites, most of which are located in and around Rio de Janeiro.

And the banking sector, in particular, leads in the adoption of new technologies

An interesting consequence of the years of hyperinflation experienced in Brazil in the 1980s is the highly advanced state of IT use in the banking sector, which rivals or surpasses that of banks in most developed countries.³⁰

³⁰During the rampant inflation of the 1980s, money left in bank accounts even one day would have lost value rapidly. Banks had a vested interest in transferring funds very quickly and, as a result, invested heavily in IT to

Brazilian banks have very sophisticated relationships with their customers. For example, banks have been proactive in establishing various electronic payment mechanisms. They partner with utilities to facilitate their customers' bill payments and currently are creating relationships with web sites to facilitate payments for e-commerce transactions. Banks' IT investments continue to grow.

In addition to the banking sector, the computer and telecommunications sectors are also leaders in adopting new technologies.

But the market is not as conducive to "E-Business" as many others

Nonetheless, on a comparative basis, Brazil lags behind the United States and the European Union in IT use, and its market remains vastly underdeveloped. The Economist Intelligence Unit's recently compiled "E-Business-Readiness Rankings" placed Brazil 34 out of 60 countries evaluated for e-business environment and connectivity.³¹ Other indicators also show that the telecommunications and IT infrastructure in Brazil, while having enormous potential, is currently underdeveloped. According to IDC, IT spending per capita in Brazil in 1997 was \$64, compared to \$1,200 in the United States and \$470 per capita in Western Europe. Teledensity in Brazil is 17 lines per 100 inhabitants, compared to 66 per 100 inhabitants in the United States. PC penetration is only 7

PCs per 100 people, as compared to more than 50 per 100 people in the United States.

Income distribution patterns remain problematic

Income distribution is highly uneven, with only a small minority of the population capable of purchasing telecommunications services, mobile phones, personal computers, Internet access services, and other IT products and services. World Bank statistics indicate that 20 percent of Brazil's population accounts for approximately 64 percent of consumption; the remaining 80 percent accounts for only 36 percent of consumption. However, the top 20 percent of the population (33 million people, roughly equivalent to the entire population of Argentina) embraces new technologies. The boom in the cellular telecommunications sector is an example of this affinity; cellular subscriptions roughly doubled from 1998 to 1999.

Income is not only highly concentrated in the top percentage of the population, but also concentrated within certain geographic areas. Per capita income in the south and southeast regions of Brazil run 120 percent and 140 percent of the average per capita income for the country, respectively. In contrast, per capita income in the north and northeast run 60 percent and 50 percent of the country's average per capita income, respectively. As a result, the market for telecommunications services, IT applications, and Internet access is focused in the populous and affluent southeastern area of Brazil, around São Paulo and Rio de Janeiro. São Paulo state, which alone accounts for 30 percent of Brazil's GDP, has the largest share of telecommunications sales, with Rio de Janeiro and the Federal District states the next largest markets.

automate their transactions. This is in stark contrast to Argentina, where people did not use, and came to distrust, banks during this period. Argentine banks are still not very automated. See Chapter 3.

³¹This put Brazil in the second tier of countries considered, along with several other Latin American countries including Chile, Argentina, and Mexico.

Brazil: Per Capita Income, by Region



Source: ANATEL/IBGE

Government regulations can make the IT and telecommunications markets difficult to enter

Until the 1990s, Brazil's market essentially was closed to foreign telecommunications and IT firms as the government attempted to protect and foster domestic technology manufacturing industries. The situation has changed considerably over the past decade. In the 1990s, as part of the Cardoso Administration's broader economic reforms, the government began to change its telecommunications and IT-related policies. Many of the more restrictive policies were abolished and substantial strides have been made toward greater market liberalization. Nonetheless, Brazil can still be a difficult market to enter. The government continues to enact and enforce some restrictive policies regarding high-technology imports, including strict procurement policies, high tariff and tax rates, and restrictive import regulations which can impede foreign firms' access to the market.

And IPR protections are not well-enforced

An additional issue of concern for foreign high-tech firms operating or selling in Brazil has been inadequate protection of intellectual property rights (IPR). Although Brazil participates in most major intellectual property organizations and treaties,³² and most of the country's IPR statutes are consistent with Western standards, in reality serious deficiencies exist regarding IPR protection.³³ While awareness of IPR issues appears to be relatively sophisticated, significant problems remain in relation to software applications for residential use. Despite the government's renewed efforts, implementation and enforcement are uneven, fines are too low to deter infringement, and the inefficient nature of the courts and judicial system have complicated IPR enforcement.

But opportunities exist for those willing to invest the time and learn the intricacies

Despite these issues, Brazil's large market offers many opportunities for U.S. small- and medium-sized IT and telecommunications firms willing to learn Brazil's market intricacies and invest the necessary time and effort to enter the quickly growing market.

The United States holds the single largest share of the import market for telecommunications

³²Brazil is a member of the World Intellectual Property Organization (WIPO) and a signatory to the Washington Patent Cooperation Treaty and the Paris Convention on the Protection of Intellectual Property. Brazil is also signatory to the GATT's Trade-Related Aspects of Intellectual Property (TRIPs) Agreement.

³³The United States Trade Representative (USTR) is threatening to add Brazil to its Special 301 Priority Watch List. The list refers to countries that lack adequate and effective intellectual property protection or market access for U.S. interests.

equipment and U.S. companies are viewed positively in the market. The United States also dominates Brazil's software market. Nearly all Internet and e-commerce-related software and services, such as consulting, are supplied by U.S. firms. U.S. firms are recognized as the global market leaders in these cutting-edge industry sectors.

Brazilians are eager to invest in IT

Internet use currently is primarily for static web sites and for e-mail. In addition, most Brazilian firms have not integrated their front offices or web sites with their back offices. Most Brazilian companies, however, recognize the need to upgrade their level of IT use, and their awareness of IT is relatively high, according to industry observers. In fact, upper-level management in Brazilian companies reportedly is generally more receptive to new technologies than, for instance, its counterpart in Europe. Industry observers comment that most large-sized Brazilian corporations use LANs, intranets, Internet access, and web sites, and these are all relatively common for medium-sized companies.

Although tight budgets are a constraint

A major factor hindering greater IT investment, however, is a lack of capital. In the immediate post-recession era, firms' budgets are tight. As in Argentina, it can be difficult for a local company to obtain loans and financing on reasonable terms. Given Brazil's history of hyperinflation, the government's sensitivity to inflation concerns precludes it from taking steps to lower interest rates. Industry observers indicate that although some major international companies offer financing, the interest rates on these loans are not substantially lower than those offered by Brazilian banks. This is in contrast to the United States, where many

businesses use loans to finance their IT investments.

TELECOMMUNICATIONS

Brazil's telecommunications market was valued at \$10 billion in 1999. The telecommunications sector has been growing rapidly. For instance, despite a growth in GDP in 1999 of less than one percent, the mobile telephony sector grew that year by 104 percent, fixed telephony by more than 25 percent, and pay television by almost 9 percent. In addition, the public telephony services sector, such as pay phones and rural call centers, rose more than 25 percent.

In recent years, as part of a comprehensive economic liberalization agenda, the government of Brazil has been liberalizing the sector to increase competition and the quality of infrastructure and services. These changes, combined with massive unmet demand for basic telecommunications services and burgeoning demand for value-added services such as Internet access, have placed the telecommunications market on the path toward dramatic growth. The regulatory agency, the Agencia Nacional de Telecomunicações (ANATEL), is well-respected and puts heavy emphasis on encouraging competition in the sector and on ensuring universal service.

Because of anticipated market growth, annual investments in telecommunications are substantial. Approximately \$8.2 billion was invested in the telecommunications sector in 1999. ANATEL expects investment in the industry to run about \$10 billion a year and total \$64 billion during the 2000 to 2005 period. Some analyst estimates even place investment in the mobile telecommunications sector alone at \$9 billion in 2000.

While investments are running high, the teledensity rate remains low in relation to the population size. Despite a large push toward privatization and competition in services in recent years (described below), Brazil suffers from a serious lack of telecommunications infrastructure.

Improvements in the telecommunications sector have been dramatic in recent years. A recent survey by A. T. Kearney reported significant improvements in competitiveness, efficiency, quality, and the availability of products and services. Most of the goals set by ANATEL in conjunction with privatization and liberalization have been met or exceeded. In fact, ANATEL reported at the end of 1999 that over 80 percent of its goals³⁴ had been met. By that date, 27.8 million fixed access lines were installed, exceeding ANATEL's goal of 25.1 million, and 84 percent of the network was digitalized, surpassing ANATEL's goal of 75 percent. ANATEL also set goals for call completion rates, billing errors, and time frames for the provision of service and repairs, most of which were met. According to ANATEL, the cost to the consumer of acquiring a fixed telephone line has fallen over recent years from more than 7000 *reais* (approximately \$3,872) to 50 *reais* (approximately \$28) and as low as 12 *reais* (approximately \$7) in some areas.

Nonetheless, on a countrywide basis, access to telecommunications infrastructure remains limited. Infrastructure is most heavily concentrated in those geographic areas with the highest incomes and greatest population density, namely, the south and southeast. The population densities of Brazil's south and southeast regions are 76.5 and 43.7 inhabitants

per square kilometer, respectively; the teledensity rates in these same regions were more than 23 lines and more than 18 lines per 100 inhabitants, respectively, at the end of 1999. In contrast, the rural north, northeast, and central western areas, which have only 3.4 inhabitants per square kilometer, are under served by Brazil's telecommunications infrastructure. The north region had just over 1 million installed fixed lines at the end of 1999, for a teledensity rate of about 9 lines per 100 inhabitants, and the northeast region had 3.7 million installed fixed lines, for a teledensity rate of about 8 lines per 100 inhabitants.

Several major international producers of telecommunications equipment, wireless telecommunications equipment in particular, have established manufacturing operations in Brazil, although they import most of their parts and components. The United States supplies the single largest share of Brazil's telecommunications equipment imports, 40 percent, while Japan supplies 26 percent, Germany 14 percent, and France 10 percent. Brazil's telecommunications exports to other countries in the region have boomed. In fact, its exports of wireless communications equipment increased almost 200 percent from 1998 to 1999.

From government monopoly to competition

In the past, the Brazilian telecommunications market was virtually closed to foreign firms. The sector now is much more open, and full liberalization will occur in the next couple of years. However, vestiges of old protectionist policies, procedures, and attitudes remain. Understanding some of the history of the current regulatory climate and attitudes toward

³⁴335 of 411 performance targets.

foreign firms will be helpful for any U.S. high technology SME interested in competing in the Brazilian market.

Until the 1990s, telecommunications services were operated under the aegis of the Brazilian government. The state-owned TELEBRAS system had a monopoly over local telecommunications, including its subsidiary EMBRATEL which controlled domestic and international long distance telephony and data communications. During this period, purchases by these government-controlled entities accounted for more than 90 percent of the total Brazilian telecommunications market, and because these operators were required to source domestically as much as possible, the market effectively was closed to foreign equipment suppliers.

Brazil's telecommunications policies became less stringent in the 1990s as the government took various steps toward increasing competition in services provision. The 1997 General Telecommunications Law³⁵ laid out many of these steps, which included creating an independent regulatory agency, breaking apart and privatizing the state-owned operators, issuing licenses for new operators to compete, and setting new performance criteria and standards for all operators to meet.³⁶ ANATEL plans to open the sector to new licensees at the end of 2001, when the current operators will be allowed to provide both inter-regional and international long distance services in direct

competition with each other, and to fully liberalize the sector by the end of 2002/beginning of 2003.³⁷

To make regulatory policy less subject to political pressures, the government created ANATEL in 1997. The Ministry of Communications (MOC) traditionally both had set telecommunications policies and regulated telecommunications services. ANATEL, an independent regulatory agency, took over MOC's regulatory responsibilities and currently regulates all industry sectors except broadcasting, which will be covered by future legislation.³⁸

In 1998, the government privatized the TELEBRAS system, breaking TELEBRAS into 12 separate holding companies -- three regional fixed-line companies,³⁹ eight regional cellular providers,⁴⁰ and EMBRATEL, the long distance

³⁷At the time of printing, it was reported that the Brazilian government had decided to work on moving up its market liberalization schedule to sometime in late 2001.

³⁸MOC remains responsible for setting telecommunications policy.

³⁹Telesp, Telenorte Leste, and Telecentro Sul.

⁴⁰The original eight cellular holding companies, covering ten service areas, were called: Telesp Celular, Tele Sudeste Participações, Telemig Celular Participações, Tele Celular Sul Participações, Tele Norte Celular Participações, Tele Centro Oeste Celular Participações, Tele Leste Celular Participações and Tele Nordeste Celular Participações. These holding companies in turn control the various cellular providers, which are called: Telesp Celular, Telerj Celular, Telest Celular, Telemig Celular, Telepar Celular, Telesc Celular, CTMR Celular, Teleacre Celular, Telebrasil Celular, Telegoiás Celular, Telemat Celular, Telems Celular, Teleron Celular, Teleaima Celular, Telemazon Celular, Telemapá Celular, Telepará Celular, Telma Celular, Telebahia Celular, Teleripe Celular, Telasa Celular, Teleceará Celular, Telepisa Celular, Telern

³⁵"Lei Geral de Telecomunicações".

³⁶Brazil also committed to its trading partners to open its services markets to foreign firms by joining the World Trade Organization (WTO)'s Agreement on Basic Telecommunications Services. However, Brazil has not yet ratified the agreement.

company-- and sold its controlling interest to private investors for \$19 billion. MCI, the only U.S. firm to win a bid in the privatization process, obtained a controlling stake in EMBRATEL. Other purchasers of these new operators were various consortia of firms from Brazil, Spain, Portugal, Italy, Canada, and other countries. In particular, Spain's Telefónica de España had a strong presence in the privatization process.

The government also issued licenses for four new wireline companies (known as "mirror" companies) to compete with the newly privatized, formerly state-owned firms; three licenses for competitors to the three established wireline operators, and a fourth license for a new competitor to EMBRATEL. To further increase competition in rural areas, ANATEL plans to issue a second phase of wireline "mirror" licenses in municipalities not covered by the original "mirror" licenses. As an incentive to enter these markets, companies that purchased these licenses were permitted to compete in the national long distance market starting in January 2000. Similarly, ANATEL also auctioned off eight licenses for new cellular mirror companies. These new "Band B" operators compete with each of the formerly state-owned cellular operators (operating in "Band A") in their respective geographic service areas.⁴¹

The new licensees, both wireline and wireless, agreed to criteria on building out infrastructure

Celular, Telpa Celular, Telepe Celular. There are, in addition, a few other cellular providers: Ceterp Celular, CTBC Telecom Celular, Sercomtel Celular, and CRT Celular.

⁴¹The new "Band B" providers include BCP, Tess, ATL Algar Telecom Leste, Maxitel, Global Telecom, Telet, Americel, Norte Brasil Telecom, and BSE.

and meeting certain service quality standards which were aimed at improving Brazil's telephone system. As previously mentioned, almost all of the goals and performance criteria established by ANATEL have been met, with a few exceptions. In cases in which ANATEL's standards are not met, the agency now is authorized to levy fines up to 50 million *reais* (approximately \$27 million).

Despite market-opening steps, barriers to entry remain

Despite these steps toward market liberalization, Brazil has not abandoned fully its protectionist policies vis-a-vis its telecommunications industry.

Brazil's import tariffs on telecommunications (and IT) products are relatively high, averaging approximately 20 to 25 percent, although they are generally lower for sophisticated goods not produced locally. As a member of MERCOSUR,⁴² Brazil's tariff regime is undergoing change. All tariffs on trade between member countries were reduced to zero in January 2000, except for tariffs on some agricultural products. A common external tariff of 16 percent maximum will be applied to all telecommunications and IT products from non-MERCOSUR countries by 2006.

New regulations⁴³ issued in August 1999 require telecommunications carriers to give preference to domestic companies when

⁴²MERCOSUR is a common market formed among Argentina, Brazil, Paraguay, and Uruguay. These four countries have eliminated most restrictions on intra-MERCOSUR trade and maintain a MERCOSUR common external tariff on imports from other trading partners. For more information on MERCOSUR, see the Appendix.

⁴³Resolution number 115.

acquiring telecommunications services and equipment. Furthermore, among services and equipment produced in Brazil, preference must be given to purchasing those using Brazilian technologies. The decree is ostensibly designed to attract new investment in high technology areas, by giving priority to Brazilian technology, investment, and R&D. This type of preference for domestically manufactured equipment was also incorporated as terms within the licensing contracts signed by each telecommunications carrier upon privatization.⁴⁴

Licensing, testing, and certification requirements for telecommunications and IT equipment imports also have traditionally been a barrier to U.S. participation in the Brazilian market. The situation has improved, but the process continues to be lengthy, costly, and far in excess of U.S. requirements. Although import licenses are generally granted within five days, on occasion obtaining one can be difficult. As with several other Latin American countries, Brazil's government requires "homologation," or government recognition of certificates of conformity, which creates an additional step in the certification process. Homologation can function as a *de facto* trade barrier, resulting in delays for products' arrival to the marketplace and increased costs for imported high-technology products.

⁴⁴The licensing contracts include articles 15.8 and 9.8 stating that formerly state-owned companies purchasing telecommunications equipment should look first into the Brazilian market before buying from foreign suppliers. These articles further obligate the formerly state-owned and mirror companies to list publically all procurement and intentions to purchase, and to justify their procurement decisions. Operators violating the regulations may be subject to penalties up to \$18 million.

There are some efforts to address these difficulties. ANATEL recently proposed new certification and homologation procedures and held a public consultation process in late 1999 and early 2000. ANATEL actively sought input and suggestions for specific changes from the industry. It is unclear when these regulations will be released in final form or implemented.

The region's financial crisis affected the industry

Telecommunications was one of the few industries that did not contract during last year's recession. Nonetheless, the industry was affected negatively to some degree, mainly due to cash flow and sustainability problems. Although most telecommunications operators' revenues are denominated in the *real*, operators pay for the vast majority of their capital expenditures in foreign currencies. Due to extreme price sensitivity, costs could not be passed on to consumers, but were borne in most cases by manufacturers and operators. Overall, the recession hindered some new operators' abilities to improve services on existing accounts and build out new wireline and wireless networks to the satisfaction of ANATEL, as required by their licenses.

In the long term, however, the recession's affects on the telecommunications industry appear to have been positive, initiating restructurings leading to greater efficiency and competitiveness. Despite the difficulties stemming from the financial crisis, the telecommunications industry is growing rapidly. The introduction of competition through the mirror companies, as well as the anticipation of even greater competition in the sector upon full liberalization in late 2002, in conjunction with strong performance standards from ANATEL, have pushed both the wireline and wireless

companies to invest in expanding their infrastructure and service offerings to secure market share and defend their market position. Growth rates in the wireline telephony sector have increased consistently over recent years: 10.5 percent in 1995, 12.6 percent in 1996, 14.1 percent in 1997, 17.6 percent in 1998, and 25.5 percent in 1999.

Mobile wireless: Cellular and PCS

As mentioned earlier, cellular technology is very popular with consumers in Brazil, primarily for status reasons, but is also preferred in many cases because of the poor service quality and lack of infrastructure in the fixed telephony sector. Although the currency devaluation and ensuing economic recession caused growth in subscribership to lag in 1998 and early 1999, cost-cutting measures, company restructurings, pre-paid programs, tariff promotions, and handset subsidies, as well as aggressive system buildouts by the new competitors, have kept growth alive. As economic pressures have eased, cellular subscribership has boomed.

The cellular market is the fastest growing telephony industry segment, increasing an incredible 104 percent in 1999, up from 62 percent growth in 1998. The sector is expected to expand another 40 percent in 2000. Brazil's cellular market was estimated to have 15 million subscribers at the end of 1999, 60 percent of which are covered by the former TELEBRAS cellular companies and the remaining 40 percent by the newer "Band B" competitors.

Digitalization of cellular systems began in 1997.⁴⁵ Operators' tenders for digital equipment, likely spread over several years with the largest operators buying first, will provide a huge opportunity for U.S. equipment suppliers, including U.S. SMEs who make leading-edge telecommunications technologies.

Competition in Brazil's wireless market will evolve with the introduction of Personal Communications Services (PCS) slated for later this year. ANATEL plans to award new PCS licenses in 2000, with services expected to commence in the first half of 2001. The agency is considering spectrum allocation in either the 1800 MHz or 1900 MHz bands,⁴⁶ and currently plans to announce the decision as well as the rules for the auction in June 2000. News reports indicate that the agency also is considering awarding additional licenses in the PCS band in 2001.

Wireless local loop

The use of wireless local loop (WLL) will grow considerably since ANATEL authorized the "mirror" companies to use WLL to offer basic telephony services starting in late 1999.⁴⁷ Some operators have begun to offer voice over WLL. The "mirror" companies are eager to use

⁴⁵Brazil's digital cellular networks operate on either of the two digital AMPS standards, Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA).

⁴⁶Either two 40 MHz sub-ranges (1870 MHz to 1910 MHz and 1950 MHz to 1990 MHz) or two 55 MHz sub-ranges (1710 MHz to 1785 MHz and 1805 MHz to 1880 MHz).

⁴⁷By law, the former TELEBRAS operators cannot offer WLL. This is one way that the government is trying to increase competition, since the TELEBRAS firms already have well-established networks and the "mirror" firms are starting from scratch.

wireless technologies to build out their networks rapidly, with lower installation and implementation costs, to compete more effectively with the privatized TELEBRAS companies. Industry observers state that the rollout in Brazil is the largest such implementation of WLL in the world. ANATEL predicts that up to one third of the fixed lines set up over the next five years will be WLL, constituting a market worth approximately \$5 billion. U.S. suppliers of WLL technologies should be quite competitive, since components for WLL networks are not available locally.

Cable television

Pay television arrived late in Brazil as compared with other emerging economies such as Argentina and Mexico. The number of pay television subscribers in Brazil is growing at a rate of approximately 96,000 new subscribers per month. Estimates vary as to the total number of potential pay television subscribers in Brazil. The industry trade association estimates that in 2003 there will be 8.5 million subscribers, whereas private service providers like TVA and HBO/Brazil estimate this number will be closer to 6 or 7 million. Net/Brazil estimates that this number could reach as high as 10 million subscribers, if Brazil's economy reaches growth levels of 4 percent in 2000.

The sector is poised for dramatic growth. ANATEL licensed 121 new cable television operators and 53 new MMDS operators in 1999, in addition to new licenses issued in 1998. MMDS wireless technology is increasingly popular in Brazil as an inexpensive way to cover large areas. Most major operators in Brazil are upgrading their existing infrastructure and installing new networks to position themselves to take advantage of future

markets. U.S. equipment suppliers dominate this import market, with a 55 percent share, and cable operators are very familiar with U.S. technology and ready to adapt it to the Brazilian Market.

The Brazilian Open TV Association (ABTA) estimated that investment in pay television infrastructure would be \$90 million in 1999, and that imports would supply 80 percent of that total. Leading the demand for this equipment are purchases by the three major operators in Brazil, Multicanal, Net/Brazil, and TVA, which combined command 92 percent of the pay television market. In 1999, these operators planned to invest between \$350-400 million in expansion of services, of which \$200-250 million was to be spent on equipment. ABTA estimates that total investment in the sector by 2003 will be \$5 billion.

DATA NETWORKS

Data communications in Brazil is relatively new, but the market is expanding quickly. Analysts predict growth rates of 50 to 60 percent, driven by larger and larger data transfers and burgeoning demand for high-volume, high-speed data and multimedia solutions. In fact, corporate data bandwidth needs are growing faster than firms' demand for Internet access.

Brazilian organizations are becoming increasingly networked as they invest in local area networks (LANs), client/server applications, and intranets. Larger firms also are investing in extranets and, as a result, their spending priorities include network management and network security solutions to protect these networks from intrusion. U.S. suppliers currently dominate the Brazilian

market for network security products, which remains a lucrative one for U.S. firms, particularly because the supply of engineers trained in networking and network security reportedly is very limited in Brazil.

The government considers provision of data communications to be a value-added service, and does not restrict new market entrants. The sector has therefore been essentially unregulated for years. Many new providers including MetroRed, Diginet, and AT&T/Netstream have been attracted to the sector, although formerly state-owned EMBRATEL remains the dominant provider of business network services. Most Brazilian firms use leased lines for data transmission.

Optical fiber capacity continues to grow

Increasing demand for high-speed data transmission is spurring fiber optic investments by telecommunications providers and data communications firms. In a relatively short time, fiber optic capacity both to and within Brazil has exploded, and the market continues to expand. Deployment of fiber also is being driven by falling prices, which have dropped considerably since the privatization of TELEBRAS.

Currently, five submarine fiber optic cable systems offer in total more than 300 gigabits per second (Gbs) capacity to Brazil, and additional investments continue. Terrestrial fiber optic capacity within Brazil is experiencing strong growth as well. There is a strong push to link all major Brazilian cities by fiber optics and several major projects have been announced or have gone into service over the last few years. A new backbone offers service to central, western and southern parts of the country. Various firms have announced plans to build

new fiber optic networks, including electric utilities, transportation, and oil distribution companies that are laying fiber optic cable along or on top of their infrastructure, sometimes working together with telecommunications companies.

Industry representatives report, however, that it can be problematic to obtain permission to dig and lay cable. Providers must negotiate with local governments and the speed of the approvals process varies tremendously. Until fiber is more widely deployed, demand will also fuel growth in investments in transitional transmission technologies, such as ISDN, MMDS, satellite, and DSL.

INTERNET

With more than 40 percent of the region's Internet users, Brazil is the Latin American leader in Internet use. It is considered the region's "early adopter", and deployment of the Internet in Brazil is estimated to be approximately 6 months ahead of the two next largest markets, Mexico and Argentina.

The Boston Consulting Group estimated that there were 8.8 million Internet users in Brazil in early 2000. However, compared to its population, Brazil's Internet use is relatively low. The Internet penetration rate is approximately 5 percent, compared to 52 percent in the United States. Currently, Brazilians use the Internet mostly for e-mail access, and it is not as common to "browse the web" in Brazil as in the United States.

São Paulo and Rio de Janeiro are home to 60 to 70 percent of Brazil's Internet users, and 85 percent of Brazilian Internet users are from the upper and middle classes. Nonetheless, these economic classes are reportedly very trendy and

sophisticated and have quickly begun using the Internet. In fact, market specialists report that approximately one third of Brazilian consumers that can afford to go on line do so, resulting in an Internet penetration rate among these higher economic classes similar to the penetration rate in southern European countries. Brazil's Internet use among the upper classes is growing at 80 percent annually and the market has enormous potential. The Yankee Group predicts that the number of Internet users in Brazil will grow to 35 million by the end of 2003, reaching a penetration rate of about 20 percent. Competition among ISPs and portals for these users is already intense.

Despite strong interest, there are barriers to greater residential Internet use

Among the 20 percent of the population that can afford to be on line, hindrances to faster Internet penetration growth exist. Brazilians pay for local telephone calls by the minute, which discourages Internet use. Infrastructure constraints remain an issue -- even among those people in the cities who can afford Internet use, there are not enough telephone lines in Brazil to meet demands for Internet access. Relatively high PC prices also have contributed to a low PC penetration rate. Currently, 12 million PCs are installed in Brazil, resulting in a PC penetration rate of 7 percent. However, PC prices have been falling recently, averaging approximately \$1,500, and ISPs have moved to make PC ownership affordable by offering PCs on installment plans. As a result, PC ownership is rising.

Until very recently, high Internet subscription fees were also a major hurdle to greater Internet use. However, challenged by the introduction by major banks of free Internet access to their clients in December 1999 (see below), a

growing number of ISPs in Brazil have lowered their prices dramatically or have begun to offer free access, so this is much less of an issue than it had been previously.⁴⁸

Lack of bandwidth is another problem. Most Internet access currently offered in Brazil is via slow dial-up modems, resulting in bottlenecks during information download. High-speed Internet access technologies, including cable, ADSL, and ISDN are just beginning to be rolled out and tested, but they are not yet widespread and there is a large backlog of demand.

Internet use in schools

In general, private schools have PCs and Internet access, although the majority of public schools do not. The Brazilian government wants to increase the use of PCs and the Internet in schools, and has some policies in place to do so. For example, a bill currently in the legislature would use some of the taxes ANATEL collects to pay for PCs and to fund Internet use in schools. However, there is a limit to how much money the government can commit to this effort. Industry observers state that most Brazilians do not have access to education at all and the government's more fundamental education-related concern is to make basic education more accessible to the Brazilian population.

Business Internet use lags, but interest is picking up

Internet use in Brazilian businesses is more widespread than in private homes. Most large

⁴⁸However, some industry observers in Brazil report that this free access has many problems, including poor service and security concerns, and that recently customers have been moving away from the free accounts and returning to pay accounts.

companies use e-mail and have web sites. These currently tend to be static sites to establish an Internet “corporate presence” for image and prestige or for marketing purposes, and do not yet provide interaction with customers, suppliers, or allow for e-commerce. Many firms realize that these static sites are insufficient and are looking to expand functionality.

Internet use among Brazilian SMEs is low. Because the small business and home office markets have not been targeted by ISPs, these customers have far less choice in providers, services, and prices. Most SMEs must use slow dial-up Internet access or pay up to \$1,000 for a dedicated T1 telephone line.

Banking is the leading business sector in Internet adoption. In fact, Brazil has a burgeoning market for web-based financial services. Unlike in the United States, where traditional banks and brokerages were late getting on the web, Brazilian banks are getting on line and offering services before web-based start-ups can establish a strong market presence. Some banks are entering the business-to-business (B2B) realm, such as Grupo Financiero Banimex Accival (Banacci), which is building a B2B e-marketplace. As banks move into the Internet and e-commerce, network security technologies are in great demand to guarantee more complex transactions through the Internet and to integrate with wholesale and retail firms to facilitate e-commerce.

To build an on-line customer base, many banks offer free Internet access. In fact, the rapid influx of banks offering their customers free Internet access in late 1999 and early 2000 has

spurred traditional ISPs to do the same, resulting in widespread free access in Brazil.

The Brazilian government’s use of the Internet

All government ministries reportedly have e-mail and web sites. Further, Brazil is the leading country in the world for filing taxes over the Internet. In 1999, 60 percent of Brazilians filed their income taxes on line and more than 80 percent were expected to do so in 2000. Refunds will be delivered directly into bank accounts this year, and the government plans to be able to accept tax payments electronically in 2001. On-line tax filing is encouraged by free tax software and guarantees that electronic filers will receive tax refunds sooner than regular filers.

The Brazilian government uses the Internet in a limited way for public procurement, publishing its bid process, procurement rules, a catalog of the goods and services it uses, and bid results on the web. Actual bidding requires a signature and is done off-line. The government currently is creating laws to permit digital signatures and certification to allow electronic bidding and is working with consultants to develop and implement the technology to conduct such transactions, as well as integrate them into the public accounts. As with the U.S. Government, Brazil’s government is a large-scale purchaser and it expects this shift to e-commerce to generate a large amount of B2B transactions between the government and industry, and in turn between companies themselves.

The government’s goal is to have the electronic bidding system working by the first half of 2001. Government officials report that although the current tight budget situation has made implementing this project more difficult,

there is recognition at the highest levels that this system is important, and project implementation has been essentially uninterrupted.

Socio-economic factors will limit Internet growth

Economic and technical factors will likely hamper Internet growth in Brazil's larger mass market, the 80 percent of the population in the poorer classes. Although prices have been falling, telephone services are still too expensive for most Brazilians, as are the prices of PCs. In addition, as mentioned previously, telephone infrastructure is underdeveloped outside the major cities. Another factor is the low literacy rate.

In fact, some observers believe that use of the Internet among Brazil's upper classes will soon reach a saturation point. Industry participants note that Internet growth rates began to slow in the beginning of this year, despite a rapid increase in Internet use in the second half of 1999. Thus, ISPs and content providers may be fighting over a relatively finite market.

Many people believe an exception will be in mobile Internet access, which has potential even in the mass market. Industry observers point out that despite low incomes, many people in Brazil's poorer classes do have mobile telephones. This is due primarily to lack of access to wireline telephony and, some observers claim, partly to the fact that mobile telephones are status symbols. Many poorer Brazilians are aware of the Internet and would welcome any technology which, if affordably priced, would give them access to it.

Internet Service Providers

Brazil has the greatest number of ISPs in Latin America, due to the country's relatively high

Internet use. Until very recently, there were well over 1,000 ISPs, but consolidation, which has lowered that number closer to 400, is expected to continue. Observers expect that smaller ISPs will begin to specialize in certain vertical markets.

A few large ISPs dominate the market. Brazil's Universo On Line (UOL) is the market leader, and is also the largest portal in Brazil. Other large ISPs are ZAZ, owned by Spain's Telefónica, and U.S.-based PSINet and AOL. Aside from the large providers, most of Brazil's ISPs are small local providers.

EMBRATEL dominates the wholesale Internet access market, providing access to ISPs including UOL, ZAZ, and AOL Brazil. EMBRATEL also dominates Internet services for corporate clients by leveraging its national network to offer a country-wide solution in fixed links, web hosting, and e-commerce services.

High growth rates and huge market potential have attracted large U.S. ISPs into Brazil, including AOL, Yahoo!, and PSINet. In fact, the entry over the past year of major U.S. companies escalated competition and helped drive prices down. AOL's entry in 1999 started a price war when UOL dropped its own prices to better compete. U.S.-based StarMedia, one of the most aggressive Internet portals in all of Latin America, launched Internet access services in Brazil that year as well, and has been investing heavily in infrastructure and marketing widely. Many foreign players have entered Brazil by purchasing small local ISPs, sparking a wave of acquisitions, mergers, and partnerships. Many of the foreign ISPs plan to use Brazil as a base for expansion into the rest of Latin America.

ANATEL considers the Internet to be a value-added service, which it does not regulate. As a result, no special licenses are required to operate as an ISP.⁴⁹ While ISPs may not provide voice over IP (VOIP), which is considered a basic telecommunications service, telecommunications service providers can provide VOIP, and some have begun to do so. However, VOIP is still considered an emerging technology and does not represent a major source of revenue for them.

Under Brazil's telecommunications deregulation laws, telecommunications firms may not offer Internet services directly to customers before early 2001. Until then, they may participate in the Internet market only by investing in stand-alone ISPs which market Internet services directly to consumers. Telecommunications operators are quickly building infrastructure to allow ISPs to offer high-speed Internet access and to offer the service themselves after 2001. However, until then, ISPs may not establish or operate their own switches, but must use those of the telecommunications operators by negotiating agreements with them.

A lack of broadband infrastructure

As in Argentina, most Internet access in Brazil is via slow dial-up modems, particularly in the residential sector. However, there is a huge backlog of demand for broadband Internet access, and some telecommunications operators began to roll out offerings in 1999. Two technologies in particular are competing for the broadband Internet market, cable television infrastructure and ADSL. ISDN is less widely

offered, although some telecommunications operators offer ISDN in certain neighborhoods of Rio de Janeiro and São Paulo.

Internet over cable is gaining lots of interest

In November 1999, ANATEL approved the provision of Internet services over cable television infrastructure. This development has ushered some major cable operators into the Internet market, although they must establish separate subsidiaries to offer this service.⁵⁰ At the same time, ANATEL mandated that cable operators must open their networks to both domestic and foreign ISPs.

Globo Cabo, Brazil's largest cable TV provider, launched one-way high-speed Internet access over its cable infrastructure in certain São Paulo neighborhoods in 1999 and plans to expand service in the first half of 2000. The company also is beginning to offer two-way Internet over cable in particular neighborhoods. Microsoft invested \$126 million in Globo in August 1999 to help develop Internet access over the cable infrastructure in Brazil. The two companies are developing a joint portal for their cable Internet customers as well. Globo's pay TV rival, TVA, also launched one-way cable Internet access service in São Paulo in late 1999.

Analysts have varying predictions for the future of cable Internet access in Brazil. The market research firm Strategis Group is optimistic about future market growth, forecasting Brazil to have 250,000 Internet cable subscribers and claim 12 percent of Latin America's cable modem market in 2003. How quickly or widely

⁴⁹The Brazilian government now is re-examining the Internet sector to determine if additional regulation is required.

⁵⁰Previously, any two-way interactive communication was considered to be a telecommunications service and could only be provided by a holder of a telecommunications license.

Internet over cable will grow remains to be seen, however. Some news reports indicate that new subscribers to the service still remain low, approximately six months after the service was initially offered. High costs for cable modems and subscriptions will keep many customers out of the market at least in the near term. As of April 2000, a cable modem cost approximately \$150 and monthly charges were \$50.

Widespread adoption of Internet over cable will depend in large part on prices falling to more affordable levels. This has begun to a limited degree; to lower user costs, some Brazilian cable operators lease modems to their customers.

Infrastructure issues are another hurdle to wider cable Internet use. Unlike Argentina, Brazil's cable penetration rate is not very high; only 11 of 100 households had cable television in 1998.⁵¹ Further, many cable operators must upgrade their networks to support Internet access. Where cable Internet is possible, transmissions are usually one-way, since providers' infrastructure can support two-way cable Internet access only in certain neighborhoods.

Asynchronous Digital Subscriber Line

Cable operators face growing competition from ADSL, which is making inroads into Brazil's large cities. Telefónica launched ADSL service in December 1999, with an offering of 25,000 lines. Demand, running up to 100,000 lines, immediately outpaced supply. Deployment of ADSL is expected to grow quickly in coming years in tandem with demand for high-speed data transmission.

Despite the high level of interest in ADSL, it is very expensive by Brazilian standards. Operators currently are focusing on the corporate market, where price is less of an issue. Prices will need to fall further before ADSL is deployed more widely in the residential market. Telecommunications carriers are not required to lease ADSL access to competitors, which keeps competition limited and may keep prices high in the near term.

Fixed wireless Internet is not widely used

Although the mirror telecommunications operators have deployed WLL to some degree, their WLL services currently are restricted to voice. Industry observers state that operators do not yet have the capabilities to offer data over WLL. One industry expert posited that the telecommunications operators may continue to focus on voice over WLL for the near term, given the large demand for basic voice services in Brazil.

Although there is great anticipation for Wireless Application Protocol

A few operators are offering, on a trial basis, simple text messages over mobile phones. For example, StarMedia has a deal with some cellular providers to provide e-mail and news content for their customers. However, ANATEL does not allow operators to charge for this basic service, so many are reluctant to offer it until they can make money from it.

Many industry observers report intense interest in Wireless Application Protocol (WAP)-enabled handheld devices, which were introduced in the Brazilian market in April 2000. Industry experts expect WAP to be very popular in Brazil, and some believe that Internet via WAP will grow more quickly than computer-based Internet use due to the large

⁵¹According to *TVinternational Sourcebook 1999*, 4th Edition. Baskerville Communications Corporation.

number of mobile phone users. In fact, the number of mobile phones in Brazil (15 million) is greater than the number of PCs (12 million). Low PC and wireline telephone penetration rates mean that wireless Internet is the only Internet access option for many Brazilians. In addition, WAP-enabled handhelds are less expensive than PCs, which will also make them more popular in the mass market.

However, although WAP-enabled devices will be cheaper than PCs, the cost of upgrading from a regular mobile phone to a WAP-enabled handheld will likely be a barrier to rapid uptake in the near term. Some observers predict that there will be fewer than 100,000 WAP subscribers in Brazil at the end of this year.

In anticipation of the wide uptake of handheld devices, many firms are attempting to WAP-enable local Internet sites. Brazilian telecommunications operators also are investing in WAP technologies and developing alliances with content providers. The government will soon decide whether to allow telephone operators to develop and provide WAP-enabled sites themselves or to only allow them to provide access to others' content. The decision likely will have large implications on competitiveness and pricing in this industry segment. If carriers are permitted to offer content, they will need to ally with content providers to provide content appealing to customers. In this case, content, rather than price, will be more important to gain WAP market share. If operators are only permitted to provide access, they will have to compete among themselves for customers based primarily on service price. This will result in more intense price competition and falling service prices.

Telecommunications operators will be looking for ways to profit from WAP technologies, particularly if they are not allowed to provide content and can only provide access. To this end, they are seeking technologies to integrate IP and voice billing, which may be an area of opportunity for U.S. SMEs.

A local Internet industry is emerging to serve the growing market

The explosive growth in the number of Internet users has attracted interest from private equity firms, venture capital funds, and investment houses. Brazilian Internet-related start-up firms tend to focus on creating web sites and portals, as opposed to Internet software and other technologies.

Despite the inflow of capital, funding is not as easy to obtain as it is in the United States. IPOs are uncommon. Industry participants also report that accessing funding in the country is based more on networking and personal relationships than on strong business plans, as is more the norm in the United States. As a result, Brazilian start-ups which fail are under greater personal pressure from lenders than their U.S. counterparts to account for the money lost, which tends to discourage would-be entrepreneurs.

As with small Internet start-ups almost anywhere in the world, those in Brazil face a number of challenges. Whereas many of these companies have good ideas, they lack business experience and long-term vision. As a result, there is a large and growing market for business plan consulting.

ELECTRONIC COMMERCE

Brazil has the most advanced e-commerce sector in Latin America. The Boston

Consulting Group estimates that Brazilians spent more than \$65 million on local Latin American e-commerce sites in 1999, accounting for 88 percent of Latin American sales from such sites. The currency devaluation temporarily stalled the progress of e-commerce in Brazil, but the market is growing once again. IDC estimates that e-commerce sales in Brazil could reach \$140 million in 2000 and grow at a compound annual growth rate of 139 percent to \$1.9 billion in 2003.

U.S. firms command the overwhelming share of Brazil's e-commerce software and services markets. U.S.-based and Brazilian software integrators and consultants report that they continuously look for new Internet and e-commerce technologies from the United States and put a lot of effort into bringing leading-edge U.S. technologies to the Brazilian market.

Growth in the e-commerce strategy and technology consulting field will be very high in coming years, and U.S. consulting firms of all sizes are well-respected in Brazil for their industry expertise. Brazilian firms need technologies and expertise in linking their web sites and databases, which in many cases run on legacy systems, such as IBM and UNIX mainframes.

Nonetheless, the use of e-commerce in Brazil is still very small, and like with Internet use, it remains restricted to the wealthier classes of Brazilian society. Although opportunities exist for business-to-consumer (B2C) e-commerce in Brazil, B2B e-commerce should show the greatest growth in the near term.

The government is studying electronic commerce policies

The Brazilian government reports that it considers business development through e-commerce to be of great importance. In early April 2000, the government created a working group tasked to study the legal aspects of e-commerce and, over the medium term, how to create the necessary legislation for regulation and stimulation of the sector. Various initiatives are currently underway in the legislature, including draft bills on issues of security, privacy, and the validity of documents. Industry observers report that some officials in the Brazilian government desire stricter laws *vis-a-vis* e-commerce than others. As a result, there is a high level of uncertainty among Brazilian businesses about the future of e-commerce in the country while legislation and regulations are under development.

Brazil is the regional leader in business-to-consumer electronic commerce

Although Brazil is ahead of other Latin American countries in the use of B2C e-commerce, its B2C e-commerce use currently is quite low relative to the United States and Europe. According to Brazil's Getulio Vargas Foundation, B2C transactions accounted for only 0.05 percent of all consumer purchases in 1999. Nonetheless, B2C e-commerce in Brazil is growing. U.S. Department of Commerce market specialists in Brazil estimate that almost 2.5 million Brazilians with significant buying power access the Internet daily, and that one fifth of Brazil's Internet users have bought something on-line. The average Brazilian on-line is well-educated, highly sophisticated, and accustomed to shopping internationally, but is new to Internet shopping.

Entities offering B2C e-commerce services are multiplying. A growing number of Brazilian B2C sites focus on selling low-margin products such as books and music, and auction sites are emerging as well. All of the major on-line bookstores offer content for the Brazilian market. Some retail chains in large cities such as Rio de Janeiro and São Paulo, particularly clothing stores, offer their products for sale over the web.

Some experts think that B2C e-commerce could grow rapidly in Brazil for the following reasons: 1) there are few large discount stores in large Brazilian cities; 2) even in cities, many stores reportedly have poor service; and 3) Brazilians living outside large cities must drive hours to shop and may adopt Internet shopping to save time and money. Nonetheless, there are other factors that may restrain the development of B2C e-commerce, noted below.

Impediments to growth in business-to-consumer electronic commerce exist

Impediments to B2C e-commerce in Brazil include poor telecommunications infrastructure and high PC prices, which already preclude many people from accessing the Internet. Because local telephone tariffs make Internet use expensive, Brazilians are not inclined to “surf the web” and spend time viewing e-commerce web sites. For instance, in order to avoid high telephone bills, Brazilians commonly log on to download electronic mail, log off to compose responses, and log back on to send their messages.

Other impediments relate to the lack of on-line payment options. Only about 18 percent of the population uses credit cards, reflecting the country’s uneven income distribution. Further, those people with credit cards have concerns

about on-line security. This factor may be of less significance than in other Latin American countries because of the strong involvement by Brazilian banks in encouraging growth in e-commerce. Banks have implemented various methods by which consumers can pay for on-line purchases, including debiting bank accounts, special Internet accounts, and “e-cards” (virtual cards onto which consumers put money to spend down). However, each bank has its own proprietary “e-card”, meaning there is no common standard, and these cards may only be used on web sites with which the bank has a prior arrangement or on the banks’ own shopping sites. As a result, “e-cards” remain somewhat limited in use.

Because banks play a much stronger role in Brazil than the use of credit cards, e-commerce firms are partnering with banks to debit accounts instead of partnering with credit card firms. U.S. SMEs planning to market B2C e-commerce applications in Brazil should consider financial transaction technologies that allow for these differing payment methods and that facilitate electronic partnerships with banks.

In addition, as with Argentina, Brazil is emerging from a recession. Consumers have limited purchasing power and currently do not have much discretionary income for luxury items such as books and compact discs. Perhaps even more significant is the fact that industry and market observers believe that Brazil, and Latin America generally, do not have a consumption culture as strong as that in the United States, and Brazilians do not necessarily spend a lot of money on consumer purchases. Other cultural issues impeding B2C e-commerce in Brazil are the preference for face-to-face transactions. Brazilians are not

accustomed to remote buying and selling and are therefore suspicious of purchasing goods “sight unseen.”

An underdeveloped delivery infrastructure also poses problems. Brazil has few good highways, its railroads reportedly are used primarily to transport grains, and its rivers are not regularly used for reducing transportation costs, so delivery of products ordered on-line is difficult at best. Even within urban areas, the delivery system is limited, although e-commerce is accelerating its development. These problems lead also to high delivery costs. Overnight delivery services such as FedEx and UPS provide service in Brazil, but reportedly are too expensive for many consumers.

Internet banking is beginning to take off

On-line banking is extremely widespread in Brazil, even more so than in the United States. Brazil’s initial on-line banking system is based on a long-established, proprietary, non-Internet-based system on which many banks’ electronic infrastructures were standardized and linked both to each other and to homes. Because this system is expensive to maintain and the Internet is quickly becoming an option, banks are beginning to transfer their customers to on-line banking via the Internet. One major bank, for example, recently informed its customers that they should begin accessing their accounts via the Internet since the bank will phase out the proprietary system over the coming year.

Many Brazilians are unhappy with this development. As banks push their customers to move their on-line banking to the Internet, consumers’ security concerns are rising, which was not a problem with the proprietary systems.

Brazil has a small but growing group of upper-income stock investors who are beginning to use the Internet to trade on-line. In late 1999, the Bovespa stock exchange began to offer after-hours on-line trading to cater to this market. Growth in this sector will be limited, however, because less than one percent of Brazilians own stocks.

Business-to-business electronic commerce

Few Brazilian companies use e-commerce. In 1999, B2B transactions accounted for only 0.14 percent of business transactions between firms, according to the Getulio Vargas Foundation. Like in Argentina, large Brazilian firms are estimated to be a few years behind U.S. firms in e-commerce use, and smaller firms are even further behind.

However, there is a growing interest in and demand for B2B e-commerce solutions. Some larger firms have begun investing in these technologies, creating a market for extensible markup language (XML) and e-commerce-related business applications. Many companies reportedly invest first in electronic procurement solutions, since it is relatively easy to justify how electronic procurement applications improve efficiency and reduce costs. This in turn is driving purchases of electronic sales solutions. Demand for systems integrators and consultants to help firms implement e-commerce processes is growing as well.

Sources report that typical Brazilian B2B e-commerce users are large manufacturing companies with widely dispersed global distribution chains. Automakers slowly are beginning to migrate from electronic data interchange (EDI) to IP networks and are working slowly to move their suppliers to these networks as well. However, EDI-based firms

need systems integrators and solutions providers to help them make the transition, and demand for these services is high. The pharmaceutical industry also is a leading vertical industry adopter of e-commerce, with large firms engaged in electronic distribution.

B2B portals are emerging in Brazil to facilitate B2B e-commerce between firms. Currently, most firms do not conduct their B2B financial transactions electronically, but use invoices. This may change in the near future. The German e-commerce applications firm, Intershop Communications, was reported recently to be negotiating an agreement with Brazil's banks to guarantee on-line payment of transactions between companies.

Although many Brazilian businesses realize the value of e-commerce to increased productivity and competitiveness, most firms reportedly do not know how to approach implementing e-commerce strategies, or even what some B2B components, including electronic procurement, actually involve. Some Brazilian firms are testing pilot e-commerce projects. However, many reportedly are waiting for successful examples of other Brazilian firms' use of e-commerce technologies before investing themselves.

Few smaller Brazilian firms interact with larger firms electronically. In fact, extranet use by SMEs currently is very limited. Nonetheless, large firms are expected eventually to force smaller Brazilian firms to become more networked. U.S. firms may be able to take advantage of the opportunity to help these Brazilian SMEs integrate themselves into the supply chain and become networked with larger firms.

CHAPTER 5: MARKET OPPORTUNITIES AND MARKET ENTRY STRATEGIES

Argentina and Brazil offer U.S. IT and telecommunications SMEs excellent opportunities, because of rapid growth in their IT and telecommunications markets and the preference for and confidence in U.S. technologies. The IT and telecommunications technologies in demand in both countries are similar to those in demand in the United States. However, market intricacies and differences in Internet and e-commerce adoption trends mean that some U.S. technologies may not succeed or must be modified for the local markets, or that less expensive or less cutting-edge technologies may be appropriate. Market entry strategies must also be adapted to the local markets and may differ depending on which country is targeted.⁵²

MARKET OPPORTUNITIES

Opportunities in telecommunications

Greater competition in Argentina's and Brazil's telecommunications sectors and demand for new telecommunications technologies means huge market opportunities in these telecommunications equipment and service markets. Incumbent operators and new entrants alike in Argentina and Brazil must invest in the latest technologies to quickly improve the quality, speed, geographic reach, and capacity of their networks. Wireless technologies are

particularly popular, especially those which support high-speed interactive data services in addition to voice services. Wireless technologies are quick and cost-effective to install in comparison to wireline technologies, allowing new service providers to build out their networks more quickly. A number of licenses for PCS, WLL, LMDS, and MMDS frequencies have been and soon will be awarded in both countries, so products and services for these technologies are market growth areas in which U.S. firms can compete.

Industry specialists state that U.S. SMEs can penetrate these telecommunications markets most effectively as subcontractors or in partnerships with the larger equipment vendors or systems integrators already active in the region. For example, small U.S. telecommunications equipment providers could subcontract to major multinational infrastructure vendors such as Cisco, Ericsson, Lucent, Motorola, Nokia, and Nortel, all of which are very active in the region. As in other markets, SMEs whose telecommunications equipment competes directly with larger equipment vendors' products will have difficulty establishing a foothold, but SMEs with niche products that are successful in the United States and elsewhere should be able to sell their products in these markets as well.⁵³

⁵²U.S. firms should also keep in mind that other Latin American countries which are beyond the general scope of this report, such as Mexico and Chile, may be the best markets for their technologies. Research on all markets is recommended.

⁵³One caveat is that in Brazil, publicly regulated telecommunications operators are required by law to source equipment locally if local producers make substantially the same product at the same price,

Telecommunications-related software is in high demand, particularly telecommunications-focused business packages for administrative and management functions, databases, and cutting-edge billing systems. In Argentina, business-related telecommunications software is particularly in demand by data communications service providers planning to bundle voice with their offerings beginning in November 2000. As the telecommunications networks in both Argentina and Brazil grow and become more sophisticated, and as new operators enter the market, the demand for technical telecommunications software, such as packages to administer telecommunications switches, is rising as well. Software applications for mobile voice and data communications are also large growth areas.

In addition, opportunities are numerous in value-added services, such as implementing billing systems, particularly as new entrants and incumbents will need to offer various discounts and billing schemes to attract customers and add Internet-related services to their portfolios. There is also demand for call center services, as many telecommunications operators are establishing such centers to improve customer service.

Opportunities in IT

As firms in the region increase spending on IT, many types of leading-edge technologies supplied by U.S. IT firms are in demand. Many Latin American firms are upgrading their legacy computer systems, investing in enterprise and customer management software, investing in intranets and extranets, and integrating front and back offices. Many

of these companies turn to U.S. suppliers and consultants for their expertise. In addition, as Latin American firms open their corporate networks to the outside through the development of extranets, demand for network security products and services is growing, and the network security market remains lucrative for U.S. firms.

There is a large and growing market for U.S. Internet and e-commerce technologies and services in Latin America. Some local solutions are available for B2C or B2B e-commerce markets. However, most critical solutions, such as e-procurement and e-sales technologies, come from the United States. U.S. Internet and e-commerce products and services usually enter these markets as part of larger business solutions offered and implemented by consultants.

In the Internet and e-commerce realms, successful foreign firms will be those that can tailor their technologies and offerings and apply innovative solutions to deal with the barriers present in Latin America's on-line market, as described in previous chapters. Although the development of the Internet in Latin America is likely to follow similar patterns as in the United States in many respects, the region's specific characteristics imply that a market entry strategy that works in the United States may not work in Latin America. In fact, industry observers state that many foreign Internet and e-commerce firms which simply try to replicate successful business models used in the United States often fail, because they do not take into account the differences and intricacies of the Latin American market.

although in reality enforcement varies.

Latin America's low PC penetration and teledensity rates indicate that Internet access via other means will likely be more common than in the United States, implying a demand for mobile data services, cable television, WLL, LMDS, MMDS, and other Internet access technologies. Low credit card usage in the region creates opportunities for e-commerce applications and on-line financial transaction services that do not require credit cards. For example, this situation is spurring financial institutions to demand and invest in alternative technologies for facilitating e-commerce, such as technologies to allow web-based vendors to debit on-line shoppers' bank accounts. In Argentina and Mexico, for example, people are accustomed to using smart cards for both public and cellular phones; these cards could also be used to facilitate e-commerce payments. Finally, the region's poor delivery infrastructure means that on-line shops may need to partner with traditional "brick and mortar" retail outlets to fulfill orders and function as pick-up sites, creating demand for technologies to facilitate these relationships.

More and more Argentine and Brazilian firms are eager to implement Internet and e-commerce strategies. As a result, there is growing demand for professional Internet and e-commerce services such as web site design, and for systems integrators to install, program, and connect servers to legacy infrastructures and to integrate web sites and back offices.

Because many local firms lack experience with specific information technologies and do not understand how to develop and implement IT strategies, a new consulting sector is developing in the region. The "big six" consulting companies from the United States

are expanding their Internet practices in the region, and local consultants are forming as well. Industry experts state, however, that the large consultants are often too expensive for many local firms, particularly for smaller companies, while local consultants reportedly do not have enough industry expertise. Thus, there is a niche for small U.S. consultants who may be able to partner with local consultants or establish their own offices in the region.

Although Latin American firms would like to invest in many information technologies and services, it is important to keep in mind the effects of the recent recession on their IT budgets. As a result, many firms are hesitant to commit to IT investment outlays if they are not sure of the benefits, particularly in terms of cost. These companies will benefit from information regarding the economic advantages of investing in the latest technologies and how to prioritize their investment options.

MARKET ENTRY STRATEGIES

Whether a U.S. firm plans to sell in one or several Latin American nations, the choice of where to begin will depend on the demand for its technologies and service offerings. Business and marketing styles, as well as relationships with the United States, differ between markets. As always, careful research, thorough planning, and detailed strategies will pay dividends.

U.S. companies intending to enter the Latin American markets may choose to focus their efforts initially on one market versus dispersing resources among many. Some firms may choose to focus first on Brazil, and may be able to remain focused solely on that

market for a time, because of its size and because the growth of the Internet and e-commerce is most advanced there in relation to other Latin American markets. However, Brazilian industry observers note that it may then be more difficult to enter Spanish-speaking Latin America from Portuguese-speaking Brazil because of language and cultural differences.

U.S. firms may instead choose to focus initially on the market in Argentina, depending on the demand for their specific technology or service. Many industry representatives state, however, that the Argentine market itself may be too small to support a U.S. Internet or e-commerce firm's sales goals. Nonetheless, Argentina reportedly is an excellent market from which to launch a regional strategy, since there is a common language with most other Latin American markets. For example, many Internet start-ups, as well as venture capitalists, based in Argentina appear to aim regionally. However, market specialists emphasize that a successful regional strategy must be "multi-domestic"-- offerings must be tailored to each individual country targeted. There are differences in language, and even more in cultural background, among the various Spanish-speaking countries of Latin America.

Localization is critical

The biggest factor for success in Latin America is the need to localize products and services for target markets.

Localization for language is particularly important. In Brazil, Latin America's largest market, Portuguese is spoken. Although Spanish is spoken in most other countries in

Latin America, the dialect used in each is distinct. Localization is even necessary for those markets in which English is spoken, such as some Caribbean countries, because some words in American English are spelled differently and will be viewed as typographical errors.

Language localization is critical for Internet and e-commerce web sites. Research indicates that web users are three times more likely to make a purchase over the Internet if the site is in their native language. However, for web sites, particularly those used for e-commerce, language issues can have many hidden costs. Native-language staff are necessary to maintain the sites, answer customers' questions, and fulfill orders generated electronically. In contrast, language localization is not as imperative for software programs that perform back-office and technical functions. Industry observers also state that users of niche software products are often eager to obtain new software programs quickly and prefer not to wait for translations.

Localization to account for cultural differences is equally important. Localizing web sites in terms of "look and feel" is critical. Web applications and content catering to local customs and culture will be well-received. As a result, hiring people from the target country who have a native understanding of the country's culture to localize the offering is the best strategy.

Finally, a U.S. firm should confirm that its technologies are compatible with local technologies or habits. Some technologies simply may not be used in Argentina, Brazil, or other Latin American markets. For

instance, coin-operated pay phones are not used in some markets; in fact, some markets use only pay phones based on smart cards. As a result, technologies for coin-operated pay phones will not be in demand in some areas.

Local representation is key

IT industry experts interviewed in both Argentina and Brazil stress that for smaller U.S. firms, some form of local representation is essential. Business in the region is very relationship-oriented and “face-to-face” interactions are much more important in Latin America than in the United States. A local partner will give a U.S. firm a local “face” and will use personal ties to locate and approach new customers more effectively. Local representation will give small U.S. firms more credibility, help U.S. SMEs overcome a lack of brand recognition, and make potential customers more comfortable as well. According to industry observers, there reportedly is a wariness throughout Latin America of foreign firms that want to sell a product or service without a local presence. A local presence shows customers that they will not need to call the United States if they have problems or need technical or customer support. In addition, working through a local firm offers easier access to knowledge of the local market, such as sales cycles, economic issues, regulatory issues, and cultural factors and tastes.

But which form of local representation?

An excellent option for U.S. firms is to set up a local office and hire local employees to do marketing, training, and provide on-going support for the company’s technologies. However, for small firms just entering the market, there are lower cost options with which to begin. One option is to partner with

a large, established IT firm, systems integrator, or consultant already active in the region. Another is to partner with a like-minded Latin American IT SME with complementary skills and technologies. Other options would include agents, distributors, or other representatives who can represent the U.S. firm and support its customers. Local industry experts stress that prior to choosing a local presence strategy, such as partner or representative, it is important for the U.S. firm to visit the target market and try to understand “first-hand” the local market and business culture.

Partnering with large, established IT firms, systems integrators, or consultants

Small companies in the international marketplace often lack the brand recognition and delivery channels enjoyed by larger companies. Working with more established, larger foreign IT and telecommunications firms, systems integrators, or consultants already doing business in Latin America can help a U.S. firm with its initial expansion into the region. These firms integrate the U.S. technologies into their product or service suites, allowing the SME to reach customers they might not otherwise know about and help build name recognition. According to Latin American industry representatives, many IT firms, systems integrators, and consultants working in the region are constantly looking for new leading-edge technologies from small U.S. firms (see below).

Or partnering with like-minded Latin American SMEs

Latin American IT SMEs throughout Brazil and Argentina are eager for U.S. partners, and U.S. companies may want to consider

collaborating with small local firms with complementary products or services. Many IT experts interviewed in Latin America recommended strategic alliances or partnerships as an effective way for U.S. IT SMEs to penetrate Latin American markets. Depending on the culture and organizational goals of each company, an alliance could be very formal, with well-established responsibilities, or less formal, depending on each company's corporate culture and goals. Latin American IT firms seek partnerships with U.S. firms for various reasons, including access to: 1) technologies necessary to execute ideas; 2) trained and knowledgeable people; 3) training; and 4) perhaps most importantly, additional financial resources. In addition, some Latin American Internet firms are eager to serve the U.S. Hispanic market and view partnerships with U.S. firms as a means of achieving that goal.

Latin American IT firms want to partner to gain access to U.S. firms' leading-edge technologies. According to local industry observers, most Latin American start-ups have ideas but lack the hardware, software, and technical knowledge to create the intended solution. For example, many Argentine start-ups focus on creating content, and need U.S. technologies to enable them to develop and disseminate it. Latin American SMEs also seek U.S. expertise, particularly with Internet and e-commerce technology implementation. In particular, small local systems integrators and consultants desire to partner with similar U.S. firms to provide services such as systems integration and Internet and e-commerce strategy consulting. Latin American start-ups know that being first-to-market with the latest technologies is critical, and that the industry's rapid pace and

short technology life cycles require partnering to obtain these technologies and expertise, instead of trying to develop them "in-house." Further, because U.S. firms have the reputation of being at the forefront of these technologies, partnering with U.S. IT SMEs provides Latin American IT firms with technological legitimacy.

U.S. partners are desirable for their human resources as well. Because the Internet is so new in the region, few people are familiar with the technologies or have relevant experience. Firms in the industry report that finding talented management and quality staff at the necessary pace is a factor limiting the growth of local firms. In addition, high staff turnover makes training an especially critical issue. One industry representative reported that his company would be very willing to pay, and pay well, for good quality training in the necessary technologies, such as web site design and maintenance, systems integration, or the like, necessary for the partnership to succeed. In addition, other industry participants reported that they would be more favorably inclined to purchase equipment and services from their partners if training was included.

In addition to technology, Latin American start-ups also hope to obtain capital via partnerships. Despite the recent influx of venture capital, most new IT firms in the region continue to lack funding. Interest rates on bank loans are prohibitively high in most countries, and banks in Latin America tend to be especially wary of lending to unproven start-ups or even to small IT firms with an established business. IPOs are rare. Thus, IT industry representatives in both Brazil and Argentina state that it is especially useful for

their local Internet and e-commerce companies if potential partners can bring to the partnership much-needed financing.⁵⁴

Or using agents or distributors

Agents and distributors, another possible approach to local representation, can offer cost-effective entry into new markets for U.S. IT firms. Like other partners, they can assist the U.S. firm with their knowledge of the intricacies of the target market, such as regulations and taxes.

Agents and distributors differ slightly. Agents generally take orders for and sell a product or service, but do not take possession of a product and are not directly responsible for payment. In most countries, an agent has more than one client and therefore may sell products or services which compete with those of the U.S. producer. A distributor is typically responsible for the payment of a product that is exported. Distributors sometimes combine their own product with that of the U.S. exporter, which makes the distributor more committed to selling the exporter's product.

Local market experts state that small U.S. firms which provide services such as e-commerce planning or enabling who do not choose to partner with a similar small IT firm will need an agent to sell their services locally. They also suggest that using local software distributors, who sell to systems

integrators or directly to end customers, is a good avenue for U.S. software firms.

Lists of agents and distributors can be found at the end of Industry Sector Analysis reports published regularly by U.S. Department of Commerce market specialists in Brazil and Argentina.⁵⁵ Market specialists state, however, that lists change often because the industry changes quickly. A second way to find agents or distributors is to search advertisements in specialized magazines in the target country, similar to industry journals in the United States. Another possible way to locate agents or distributors, advocated by one Brazilian firm, would be to determine which agents or distributors are used by the major players in the same market or general industry segment, and attempt to use the same ones. The U.S. Department of Commerce also provides an Agent/Distributor Service that will locate and qualify potential candidates in target markets.⁵⁶ Regardless of how agents or distributors are found, it is important that they be qualified to ensure they understand the U.S. firm's product and can provide after-sales service, if necessary.

For SMEs with highly sophisticated technologies, agents and distributors may not be the best market entry option. After-sales service, which sometimes includes working closely with the customer on technology issues, is critical in the IT industry and is a function likely best handled by the exporting firm or partner.

⁵⁴Preferably at U.S., not local, interest rates. One interviewee in Brazil reported that some U.S. firms who want to partner have obtained loans at home at U.S. interest rates, and in turn try to lend to their Brazilian partners at local rates.

⁵⁵Industry Sector Analysis reports are described in Chapter 6.

⁵⁶The Agent/Distributor Service is described in Chapter 6.

Or consider collaborating with other U.S. SMEs

Industry representatives in both Argentina and Brazil suggested a unique, lower cost way for small U.S. IT firms to achieve a local presence: that U.S. firms with complementary technologies could pool their resources to form a single commercial organization to represent them in the target market. Firms could jointly open an office, share sales people, engineers, and other resources as well. This option would be less costly and allow small U.S. firms to offer a basket of complementary solutions to the target market, thus broadening their appeal.

IMPORTANT ISSUES TO CONSIDER WHEN ENTERING THE REGION

Be patient

Industry observers state that it may take longer to conduct business transactions in Latin America than in the United States. Latin Americans tend to take more time than Americans when making major decisions and, local experts note, this is particularly true when purchasing services.

U.S. firms also must be patient when developing business relationships, such as seeking a partner. One small IT firm in Brazil which has U.S. partners stated that it generally takes longer to find the right partner in Latin America than in other regions, such as Europe. It may take longer for the Latin American firm to agree on the partnership itself. In addition, several local industry representatives stated that, because the Internet and e-commerce are so new in Latin America, finding viable partners that also specialize in these industry segments may be difficult. Thus, more time is needed for the

U.S. firm to find local firms with complementary technologies or expertise.

And price appropriately

Again according to local industry representatives, a common mistake apparently has been that U.S. firms price goods and services too high for the local economy. U.S. firms must remain cognizant of post-recession budget constraints. Those firms pricing their technologies for the local market likely will be the most successful.

Pricing considerations must be kept in mind for local partners as well. Some U.S. firms reportedly charge their Latin American partners U.S. prices for items such as demonstration software to show potential clients. Latin American firms state that it would be helpful to modify pricing schemes according to the local market, such as to require lower payments initially and then increase payments to recoup costs as the market develops.

Steps to follow

U.S. firms should keep in mind the following steps in forming a strategic alliance.

- *Identify a key individual* in each company, preferably a principle owner or senior manager, who can focus on the alliance.
- *Conduct due diligence.* Check the background of the potential partner, including the quality of products and technology, business structure, and financial soundness (the U.S. Department of Commerce's U.S. and Foreign Commercial Service offices overseas have services to help U.S. companies locate such information).

- *Set clear objectives.* Since companies will have different objectives in forming an alliance, both parties should agree on a common set of strategic objectives to gain from the alliance at the beginning; and
- *Use legal and contractual mechanisms* to protect your intellectual property rights and business interests.

LOCATING THE APPROPRIATE PARTNER OR REPRESENTATIVE

Firms must do careful research to find the best type of local representation in foreign markets. A variety of organizations exist that are eager to help U.S. IT SMEs find partners or representatives in Latin America. In Argentina and Brazil, U.S. Department of Commerce market specialists, local trade associations, and local government offices can provide needed assistance in bringing potential partners together or in screening potential agents or distributors. Trade fairs are another avenue to seek partners or representatives, although this is a less targeted approach unless meetings are pre-arranged.

The U.S. Department of Commerce can help

U.S. Department of Commerce IT and telecommunications market specialists located in district offices throughout the United States and in target markets perform various matchmaking services for U.S. firms, such as the Gold Key Service. These services are summarized in Chapter 6.

Local trade associations and government offices

Argentina and Brazil have a number of IT-related trade associations which aim to encourage profitable business practices of their member firms, many of which are SMEs.

In addition, many local government offices which work with local firms of all industries have offices that focus on the IT industry. Both types of organizations perform a variety of services for local IT SMEs, such as helping them find financial assistance and providing business plan guidance and business counseling. These organizations often take steps to assist in forming partnerships between foreign companies and local firms or to attract foreign companies to invest locally.

Trade associations and local government offices interviewed in Argentina and Brazil are eager to help their local IT SMEs partner with interested U.S. firms, and these organizations have various matchmaking capabilities. They are eager to alert their local companies about potential U.S. partners and help set up meetings between firms -- for example, when a U.S. firm plans to come to the target country, when a local firm plans to travel to the United States, or when firms could meet in tandem with a major trade show. Trade associations and local government offices that expressed an interest in facilitating communications and matchmaking between their local IT companies and U.S. SMEs include:

- Argentine Chamber of Electronic Commerce (CACE), Buenos Aires, Argentina
- Brazilian Association of Software and Informatic Service (ASSESPRO), Brasilia, Brazil
- FIESP/CIESP (Brazilian trade association), São Paulo, Brazil
- Rio de Janeiro Industrial Development Agency (CODIN), Rio de Janeiro, Brazil

- Rio de Janeiro Federation of Industries (FIRJAN), Rio de Janeiro, Brazil
- Riosoft, Rio de Janeiro, Brazil

Other local trade associations that may be helpful would be listed in the market research reports generated by the U.S. Department of Commerce representatives based in the target markets. These types of trade associations and state-level organizations also exist in the United States and provide similar services for U.S. companies. Contact information for many of these organizations are in the Appendix.

Trade fairs

Trade fairs in Latin America are an excellent way for U.S. SMEs to learn about Latin American markets and to introduce their technologies to them. Two of the most important IT-related trade shows in Brazil and Argentina each year are COMDEX Brazil (São Paulo, held in August) and COMDEX Argentina (Buenos Aires, held in May). In addition, more focused trade fairs also exist that may be more appropriate for smaller firms. Trade fairs that focus on specific vertical industries are an excellent avenue for some SMEs which have niche or vertical industry-specific products or services.

U.S. Department of Commerce personnel participate in many foreign trade fairs with, or on behalf of, U.S. firms, offering companies market exposure at prices far below regular trade fair participation costs. For a partial list of IT, telecommunications, and related trade fairs in Latin America and elsewhere supported by the U.S. Department of Commerce's US&FCS, see the US&FCS web site (www.usatrade.gov). The U.S. Department of Commerce's Office of

Computers and Business Equipment web site (<http://exportIT.ita.doc.gov>) lists IT-related trade fairs, and the Office of Telecommunications' web site (<http://telecom.ita.doc.gov>) lists telecommunications-related trade fairs. Some upcoming IT- and telecommunications-related trade events in Latin America are listed in the Appendix.

INTERNET SALES: AN OPTION?

The emergence of the Internet will significantly change distribution channels and customer relationships in Latin America, as it is doing in the United States. However, Internet-based sales to Latin America can be problematic for U.S. firms.

Internet sales to Latin America from the United States can be challenging for both seller and customer. Latin American countries have their own distribution laws, and U.S. producers who ship orders from the United States or other third countries must take care not to violate applicable laws. Further, customers will need to pay import duties or taxes on any imported items, which a web site should make clear prior to purchase. Industry observers report that, in some cases, customers must travel to international airports to clear their purchases through customs, which is time-consuming. The region's relatively poor distribution services may make it difficult for items ordered over the Internet to be delivered in a timely fashion.

In addition, IT and telecommunications products must be localized to some degree to succeed in Latin American markets. Even if a U.S. firm can fulfill an order over the Internet, it may need to modify the product

before sending it to the customer. Any products exported from the United States, including orders fulfilled over the Internet, must meet the relevant technical standards in each country. Further, certain high-tech products must meet U.S. export control regulations.

SMEs, who often cut costs by using electronic software distribution (ESD), should be aware that the region's low Internet penetration rate, very limited deployment of broadband technologies, and high costs associated with Internet use mean that ESD in Latin America currently is not an option for the average software user.

CONSIDER THE BIG PICTURE

Offer input into trade policy formulation

Foreign governmental trade and regulatory policies affect business opportunities, so the U.S. government works to create effective trade policies to facilitate U.S. firms' international business efforts. Many U.S. firms of all sizes work closely with U.S. government officials to formulate trade policies vis-a-vis U.S. trading partners, including countries in Latin America. U.S. government officials solicit and welcome input from U.S. industry on issues such as trade agreements and trade barriers that affect the ability of U.S. companies to conduct business in foreign markets.

Mechanisms for involvement in trade policy exist through the U.S. Department of Commerce's International Trade Administration (ITA) offices. Input can be informal, such as a call or e-mail to a trade specialist, or more structured, such as joining industry sector advisory committees (ISACs).

Information on ITA trade policy activities is included in Chapter 6.

ONE LOCAL FIRM'S SUGGESTED MARKET ENTRY AND DEVELOPMENT STEPS...

One Brazilian industry participant who represented a U.S. software SME in Brazil and Latin America has the following market entry and development suggestions for small U.S. firms:

- Visit Latin America to explore the local markets.
- Begin by using a distributor, one with enough geographic reach to cover at least the target market's main economic areas.
- If sales go well, hire a local employee or partner who is a local systems integrator, etc.
- Bring the local employee(s) to the United States for training and to teach them your corporate culture. This may be necessary to do on a fairly regular basis.
- If sales continue to go well, open a small local office to establish a local address.
- If business expands into other countries, try to hire a local representative in each country, with one director for Latin America conducting oversight.

CHAPTER 6: THE ROLE OF THE U.S. DEPARTMENT OF COMMERCE

INTERNATIONAL TRADE ADMINISTRATION (www.ita.doc.gov)

The mission of the U.S. Department of Commerce's International Trade Administration (ITA) is to assist U.S. companies export products and services and compete in foreign markets. Two ITA units responsible for export promotion are Trade Development (TD) and the U.S. and Foreign Commercial Service (US&FCS).

TRADE DEVELOPMENT⁵⁷

ITA's Trade Development unit is the Commerce Department's link to U.S. industry. TD provides industry and market analyses, export promotion services, advocacy for U.S. companies bidding on foreign government contracts, and support for trade negotiations. This unit offers an array of services to help small businesses increase their export potential.

Industry Expertise. TD's industry expertise encompasses nearly all U.S. business sectors.⁵⁸ Industry sector specialists provide U.S. firms with information and analyses on

domestic and foreign industry trends; foreign market conditions and opportunities for specific products or services; general exporting advice; information on foreign market tariffs and non-tariff barriers, and regulations; business and cultural practices; and advocacy assistance.

TD's industry expertise is also the primary source used by the President and the Office of the U.S. Trade Representative (USTR) in trade negotiations. TD's industry analyses, close work with industry representatives, understanding of issues such as restrictions on market access and product standards and testing, and knowledge of trade data help negotiators understand business priorities and problems and develop trade agreements that provide maximum benefit for U.S. firms. TD industry experts also help monitor and enforce foreign governments' compliance with trade commitments, working with other ITA units, including the US&FCS and Market Access and Compliance (MAC), and USTR.

TD's IT and telecommunications industry-focused offices are the Office of Computers and Business Equipment (OCBE), the Office of Telecommunications (OT), and the Office of Microelectronics, Medical Equipment, and Instrumentation (OMMI).

Office of Computers and Business Equipment

OCBE focuses on the following IT industry segments: computers and peripherals,

⁵⁷More information on Trade Development, including information on its services and industry specialist contact information, can be found at <http://www.ita.doc.gov/td>. Selected IT and telecommunications TD contacts are listed in the Appendix.

⁵⁸Except agriculture, which is the responsibility of the U.S. Department of Agriculture.

software, networking equipment, Internet technologies, and e-commerce technologies.

OCBE actively supports U.S. IT firms' efforts to expand their business overseas. OCBE industry specialists track the growth and competitiveness of domestic and foreign IT industries; counsel U.S. businesses on overseas market conditions and the practical aspects of exporting their products; identify market barriers as they affect IT exports; and work closely with USTR to negotiate the removal of these barriers.

OCBE export promotion activities include trade missions, trade fairs, catalog shows, and technical seminars that introduce U.S. businesses to potential partners and IT end-users overseas.

OCBE staff compile and disseminate detailed information and analyses on their IT industry sectors. Each year, industry specialists profile these industries in the Department of Commerce/McGraw Hill publication *U.S. Industry and Trade Outlook*, describing current and future IT industry and market trends on a domestic and global basis. These specialists also continually expand and update the OCBE web site with information on foreign markets and regulations, U.S. and foreign policies that affect IT exports, trade events, and additional government and private-sector resources. OCBE distributes a free electronic newsletter highlighting trade leads, partnering opportunities, and trade events.

In 2000, OCBE will be involved in a number of activities including work on a Market Development Cooperator Program (MDCP)

grant to assist IT SMEs (see discussion of MDCP program below); focused market research on Asia and Africa; disseminating information on partnering opportunities in Europe; distributing its IT Management Planning Tool, which helps small enterprises assess their IT usage and e-business readiness; developing an internationally focused web site to connect buyers and sellers of U.S. IT products and services; continued monitoring of computer-related trade agreements; and continued emphasis on a strong overall e-commerce focus in its trade promotion activities.

To obtain more information, including a list of upcoming OCBE-supported trade events, or to locate OCBE trade specialists, contact:

Office of Computers and Business
Equipment (OCBE)
U.S. Department of Commerce, Room 2806
14th Street & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-0572
Fax: (202) 482-0952
<http://exportIT.ita.doc.gov>

Office of Telecommunications

OT's mission is to support the growth and competitiveness of the U.S. telecommunications equipment and services industries in foreign markets.

OT provides business counseling to U.S. telecommunications firms seeking to enter specific markets by developing and disseminating information on the telecommunications market conditions in foreign countries based on information from US&FCS (see fuller description of US&FCS

services on the following pages) and a wide range of other industry resources.

OT promotes international trade and investment opportunities for the U.S. telecommunications industry by sponsoring events that offer direct contact with foreign government and industry officials. In conjunction with other parts of ITA and other U.S. government agencies, OT also acts as an intermediary between U.S. firms and foreign government officials to provide advocacy support for U.S. bidders on foreign public projects and to reduce or remove barriers that limit U.S. telecommunications firms' access to foreign markets. The office works closely with USTR on trade negotiations and other efforts to open foreign markets to U.S. telecommunications equipment and services exports, as well as on monitoring bilateral and multilateral telecommunications agreements.

OT conducts market research and statistical analysis of the domestic and international telecommunications industry, publish a variety of trade and industry reports, including telecommunication trade statistics and foreign market guides. The office distributes a series of free electronic newsletters delivering up-to-date information on foreign market opportunities and industry information to U.S. subscribers. OT also prepares the telecommunications chapters of the U.S. Industry and Trade Outlook. In 2000, the office also co-organized the Latin American Telecommunications Summit (LATS) held in Peru in March 2000 and sponsored a trade mission to Chile.

To obtain more information, including a list of upcoming OT-supported telecom events, or to locate OT trade specialists, contact:

Office of Telecommunications (OT)
U.S. Department of Commerce, Room 4324
14th Street & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-4466
Fax: (202) 482-5834
<http://telecom.ita.doc.gov>

Office of Microelectronics, Medical Equipment, and Instrumentation

OMMI covers electronic components (such as electron tubes, printed circuit boards, semiconductors, capacitors, resistors, transformers, and connectors) and semiconductor manufacturing equipment. OMMI also covers several industry sectors with high IT content, including medical and dental equipment and electromedical apparatus, process control instruments, laboratory analytical instruments, optical instruments, and instruments to measure electricity and electrical signals.

OMMI's primary mission is to promote exports and increase the international competitiveness of these U.S. industry sectors. OMMI counsels U.S. firms on foreign market conditions and the specifics of exporting, using information from US&FCS posts abroad and a wide range of other industry resources. OMMI staff also work with private sector and DOC colleagues to develop trade missions, trade fairs, catalog shows, seminars and other trade events that offer direct contact with foreign government officials, industry representatives, and end-users. In cooperation with other parts of ITA and

other U.S. government agencies, OMMI participates in and supports trade negotiations to reduce or eliminate regulatory and other barriers to trade and international investment in these industries.

OMMI staff gather and disseminate market research and statistical analyses of the domestic and international microelectronics, medical equipment and instrumentation industries. Trade and industry reports, trade statistics, information on foreign markets and regulations, U.S. and foreign policies that affect exports, trade events, and links to additional government and private sector resources are available on the OMMI website. OMMI industry specialists also profile current and future industry and market trends on a domestic and global basis in the U.S. Industry and Trade Outlook.

To obtain more information, including a list of upcoming OMMI-supported trade events, or to locate OMMI trade specialists, contact:

Office of Microelectronics, Medical Equipment, and Instrumentation (OMMI)
U.S. Department of Commerce, Room 1015
14th Street & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-2470
Fax: (202) 482-0975
<http://www.ita.doc.gov/td/ommi/>

Trade Information Center. TD's Trade Information Center (TIC) is an excellent first stop for new-to-export companies seeking export assistance from the federal government. TIC trade specialists 1) advise exporters on how to find and use government programs; 2) guide businesses through the export process; 3) provide

country and regional business counseling on standards and trade regulations, distribution channels, trade opportunities and best prospects for U.S. companies, foreign import tariffs/taxes and customs procedures, and common commercial difficulties; 4) provide information on overseas and domestic trade events and activities; and 5) provide sources of public and private export financing. TIC trade specialists also advise exporters how to access reports and statistics from the computerized National Trade Data Bank (NTDB) and direct them to state and local trade organizations that provide additional assistance. To contact the TIC, call 1-800-USA-TRAD(E); fax (202) 482-4473; e-mail tic@ita.doc.gov; or visit its website: <http://tradeinfo.doc.gov>.

Trade missions and events. Working together with the private sector and the US&FCS, TD industry experts help plan, organize, and recruit for trade events, including high-level executive missions with the Secretary and the Under Secretary of Commerce. Industry-specific trade missions and events are listed on individual offices' web sites.

Advocacy Center. The Advocacy Center supports U.S. businesses of all sizes as they compete for projects overseas. Whether a company is small, medium, or large, the Center aims to ensure that when these companies participate in international tenders they are treated fairly and that their proposals are evaluated on technical and commercial merits. The Advocacy Center marshals the resources of 19 U.S. Government agencies in the Trade Promotion Coordinating Committee and U.S. officials stationed at our embassies and

consulates around the world. Advocacy assistance can include a meeting between a key foreign official and a U.S. government official, a phone call to a high-level foreign official, a timely letter to a foreign government decision-maker, or a Cabinet or sub-cabinet level trade mission to a foreign country. Advocacy support is a means to promote our country's economic well-being by leveling the playing field. Since 1993, the Advocacy Center has helped 110 SMEs win foreign government contracts valued at more than \$2.4 billion. In addition, as suppliers or subcontractors to larger U.S. companies' overseas projects, thousands of U.S. SMEs benefit indirectly from the Advocacy Center's services. For more information, visit the Center's website at <http://www.ita.doc.gov/td/advocacy>.

Small Business Program. The Small Business Program is ITA's focal point for trade policy issues concerning SMEs. The Program brings the small business point of view to international trade policy discussions, primarily through the Industry Sector Advisory Committee on Small and Minority Business for Trade Policy Matters (ISAC-14, see Industry Consultations Program discussion below), the only advisory committee to the U.S. government on small and minority business export concerns. The Small Business Program also provides outreach to and plans events for small, women-owned, and minority-owned firms.

Industry Consultations Program. Industry has a voice in U.S. trade policy formulation through the Industry Consultation Program (ICP). The ICP is comprised of 17 Industry Sector Advisory

Committees on Trade Policy Matters (ISACs), representing 17 industry sectors of the U.S. economy, including IT, and small and minority businesses. It also has four Industry Functional Advisory Committees on Trade Policy Matters (IFACs), that address cross-cutting issues affecting all industry sectors—customs, standards, intellectual property rights, and e-commerce. Advisors on these committees have direct access to trade policymakers at the U.S. Department of Commerce and USTR, and develop their industry's positions on U.S. trade policy and negotiation objectives.

The committees address market access problems; tariff and non-tariff barriers to trade; discriminatory foreign procurement practices; the information, marketing, and advocacy needs of their sector; and other trade issues. Committee members are executives and managers of U.S. manufacturing or service companies involved in international trade or are trade association executives. For more information, see <http://www.ita.doc.gov/td/icp>.

Export Trading Companies and Trade Intermediaries. The Office of Export Trading Company Affairs (OETCA) promotes the formation and use of export trade intermediaries and the development of long term joint export ventures by U.S. firms. OETCA administers two programs available to all U.S. exporters or potential exporters. The Export Trade Certificate of Review program provides antitrust protection to U.S. firms for collaborative export activities. The U.S. Exporters' Yellow Pages™ publication is designed to assist U.S. trade intermediaries to link up with

U.S. producers of exportable goods and services. For more information, see <http://www.ita.doc.gov/td/oetca>.

Market Development Cooperator Program.

The Market Development Cooperator Program (MDCP) is a competitive matching grant program. It builds public-private partnerships by providing federal assistance to nonprofit export multipliers, such as states, trade associations, and chambers of commerce, which are particularly effective in reaching and assisting SMEs. MDCP awards help fund the start-up costs of new export marketing ventures which these groups would not undertake without federal government support. For more information, see <http://www.ita.doc.gov/td/mdcp>.

**THE U.S. AND FOREIGN
COMMERCIAL SERVICE (US&FCS)⁵⁹**

Also part of the International Trade Administration, the U.S. and Foreign Commercial Service (US&FCS) aims to assist U.S. firms in realizing their export potential by providing expert counseling and advice, information on markets abroad, assistance in locating international contacts, matchmaking services, support of trade events, and advocacy services. US&FCS trade experts are located in more than 70 countries around the world and in major cities throughout the United States.

International Operations. US&FCS offices are located primarily in U.S.

⁵⁹More information on US&FCS, including information on its services and industry specialist contact information, can be found at <http://www.usatrade.gov/>. Selected US&FCS contacts are listed in the Appendix.

embassies and consulates and are valuable connections to overseas markets. US&FCS staff in these countries are industry focused and can offer expert advice on the business practices, cultures, and languages of their specific country or region. They offer numerous products and services to help U.S. firms enter the market or assist companies already established in that country expand their sales. The main activities of these overseas offices are establishing key industry and foreign government contacts, helping match U.S. suppliers with overseas buyers, and organizing or facilitating trade events. Contact information for US&FCS IT and telecommunications market specialists in Argentina and Brazil is in the appendix. In addition, the US&FCS web site, www.usatrade.gov, has contact information for all Latin America-based US&FCS trade specialists.

Domestic Operations. These offices provide export counseling and marketing assistance to the U.S. business community through 1,800 trade experts located in 100 U.S. Export Assistance Centers (USEACs). The USEACs work closely with the Office of International Operation's overseas posts to facilitate transactions by linking U.S. suppliers with international buyers or partners. USEACs provide counseling to U.S. firms seeking to expand into international markets. USEACs help firms enter new markets and increase market share by identifying the best markets for their products; developing an effective market entry strategy aided by information generated from overseas offices; advising clients on practical exporting matters such as distribution channels, programs and services, and relevant trade shows and

missions; and assisting with trade finance programs available through federal, state and local sectors.

US&FCS Services

Market Research

- **National Trade Data Bank (NTDB).**
A “one-stop” source of international trade data collected by federal agencies, the NTDB contains over 190,000 trade-related documents, including market research reports, trade leads, trade contacts, statistical information, country reports, and more. It is available at federal depository libraries, can be purchased on CD-ROM, or can be accessed through the Internet at www.stat-usa.gov. Call 1(800) STAT-USA to order or for more information.
- **Industry Sector Analysis (ISA).** ISAs are structured market research reports produced on location in leading overseas markets. Reports cover market size and outlook, characteristics, and competitive and end-user analysis for a selected industry sector in a particular country. ISAs are available on the National Trade Data Bank and on www.usatrade.gov.
- **International Market Insights (IMI).** IMIs are short profiles of specific foreign market conditions or opportunities prepared in overseas markets and at multilateral development banks. These non-formatted reports include information on dynamic sectors of a particular country. IMIs are available on the National Trade Data Bank and on www.usatrade.gov.

- **Country Commercial Guides (CCG).** CCGs, put out annually by US&FCS market specialists, contain country-specific information on marketing U.S. products and services; leading sectors for U.S. exports and investment; trade regulations, customs, and standards; investment climate; trade and project financing; business travel; and economic and trade statistics. CCGs are available on the National Trade Data Bank and on www.usatrade.gov.

Pinpoint Export Prospects

- **Customized Market Analysis (CMA).** A CMA report assesses the market for a specific product or service in a foreign market. The research provides information on sales potential, competitors, distribution channels, pricing of comparable products, potential buyers, marketing venues, quotas, duties and regulations, and licensing or joint venture interest.
- **Trade Opportunity Program (TOP).** These are sales leads from international firms seeking to buy or represent U.S. products or services. TOP leads are printed daily in leading commercial newspapers and distributed electronically via STAT-USA.
- **Agent/Distributor Service (ADS).** ADS is a customized overseas search for qualified agents, distributors, and representatives for U.S. firms. Commercial officers abroad identify up to six foreign prospects that have examined the U.S. firm’s product literature and expressed interest in representing the U.S. firm’s products.

Promote U.S. Firms' Products and Services Abroad

- **Commercial News USA.** This export marketing magazine promotes U.S. products and services worldwide. Disseminated in print to screened agents, distributors, buyers, and end-users and on-line to electronic bulletin board subscribers. Selected portions of Commercial News USA are reprinted in business newsletters in several countries.
- **Gold Key Service.** This custom-tailored service in foreign markets combines orientation briefings, market research, appointments with potential partners, interpreter service for meetings, and assistance in developing follow-up strategies.
- **Matchmaker Trade Delegations.** These “match” U.S. firms with prospective agents, distributors, and joint venture or licensing partners abroad. US&FCS staff evaluate U.S. firms' products and services marketing potential, find and screen contacts, and handle all event logistics. U.S. firms visit the designated countries with the delegation and, in each country, receive a schedule of business meetings and in-depth market and finance briefings.
- **International Buyer Program (IBP).** This supports selected leading U.S. trade shows in industries with high export potential. US&FCS offices abroad recruit foreign buyers and distributors to attend the U.S. shows while program staff helps exhibiting firms make contact with international visitors at the show. The IBP achieves direct export sales and

international representation for interested U.S. exhibitors.

- **Multi-State Catalog Exhibitions.** These showcase U.S. company product literature in fast growing markets within a geographic region. U.S. Department of Commerce staff and representatives from state development agencies present product literature to hundreds of interested business prospects abroad and send the trade leads directly to participants.
- **Trade Fair Certification.** This supports major international industry trade shows providing high-profile promotion of U.S. products. Certification encourages private organizers to recruit new-to-market, new-to-export U.S. exhibitors; to maintain Commerce Department standards for event; and to provide services ranging from advance promotion to on-site assistance for U.S. exhibitors.

The U.S. Department of Commerce's Information & Communications Technology (ICT) Team⁶⁰

The U.S. Department of Commerce's Information and Communications Technology (ICT) Team comprises IT market and industry specialists, from both US&FCS and TD, who work together to share information and provide comprehensive services to support U.S. IT

⁶⁰For more information on the ICT team, see http://www.usatrade.gov/US/annarbor/ICT_USA.htm, or see the Appendix for contact information.

firms' exporting efforts. ICT team members are located in US&FCS Export Assistance Centers in key geographic areas throughout the United States, in US&FCS offices abroad, and in TD IT- and telecommunications-focused offices in Washington, DC.

Members offer all U.S. Department of Commerce export promotion services mentioned above; in addition, the Team's structure and programs aim to meet the specific needs of firms in the IT industry. Team members' regional presence allows them to be accessible and responsive to the many small- and medium-sized IT firms and firm clusters around the United States. The formal network of IT-focused trade specialists located in the United States and abroad adds value to U.S. IT SMEs, as domestic team members can easily access foreign-based colleagues for the most updated information for U.S. firms on trade leads and quickly changing foreign market opportunities; in addition, domestic team members can provide input to foreign-based colleagues on market research topics of use to U.S. IT firms. Finally, the ICT Team constantly develops new export promotion programs specifically to meet the needs of firms in the rapidly changing IT industry.

ICT Team services currently include the following:

- Reports specific to IT firms' exporting needs, such as a forthcoming report on distribution channels and contacts in selected markets.
- Technology-based services for U.S. firms to reach potential buyers and partners, including international video-conferencing services and virtual trade

shows on the US&FCS web site and at large IT trade shows.

- The Show Time program, which allows U.S. IT firms to meet with ICT Team industry specialists at domestic and international trade shows to learn about international sales and marketing opportunities for high-tech products and services, receive country and industry briefings, matchmaking services, and other networking opportunities.
- Coordinated trade promotion activities in partnership with state and local governments, trade associations, and trade show organizers.
- A website with an estimated 2,000 links relating to the information technology industry, expected to increase to 4,000-5,000 links.

APPENDIX

CONTACTS: ARGENTINA

U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL TRADE ADMINISTRATION - THE U.S. AND FOREIGN COMMERCIAL SERVICE

The U.S. Embassy in Argentina is responsible for providing U.S. SME exporters with the full range of US&FCS assistance in researching, entering and expanding within Argentina.

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Embassy of the United States - Argentina
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ARGENTINE GOVERNMENT

Centro de Informacion Tecnica

Perú 103, piso 4
1067 Buenos Aires
Phone: (54 11) 347-9365
Fax: (54 11) 347-9367
(Copies of standards for analog equipment (in Spanish) may be obtained at this address.)

Comision Nacional de Comunicaciones (CNC)

Roberto Catalan
President
Perú 103, piso 19
1067 Buenos Aires
Phone: (54 11) 4347-9540
Fax: (54 11) 4347-9546

Comite Federal de Radiodifusion (COMFER)

Amita Freschi
Managing Director
Suipacha 765
1008 Buenos Aires
Phone: (54 11) 4394-1349
Fax: (54 11) 4320-4935

Secretaria de Prensa y Diffusion

Ramon Raúl Delgado
Secretary
Balcarce 50
1064 Buenos Aires
Phone: (54 11) 4347-9841
Fax: (54 11) 4343-3051

Secretary of Communications

Henoch Domingo Aguiar
Secretary
Sarmiento 151, piso 4
1000 Buenos Aires
Phone: (54 11) 4318-9478
Fax: (54 11) 4318-9441

LOCAL TRADE ASSOCIATIONS AND GOVERNMENT OFFICES

ATVC (Asociacion de Television por Cable)

Horacio Guibelalde
President
Avenida de Mayo 749, piso 2
1084 Buenos Aires
Phone: (54 11) 4342-3362
Fax: (54 11) 4343-1716\

CACE (Argentine Chamber of Electronic Commerce)

Jose Calderazi
Tesorero
Argentine Chamber of Electronic Commerce
Av. Federico Lacroze 1825 1° "F"
(1425) Buenos Aires - Argentina
Phone: (54 11) 4774-8642
Cellular: (15) 4477-7900
E-Mail: calderazi@cace.org.ar
Web Page: <http://www.cace.org.ar>

Camara De Importadores De La Republica Argentina (Argentine Chamber of Importers)

Mr. Diego Perez Santisteban, President
Av. Belgrano 427, Piso 7
1092 Buenos Aires
Phone: (54 11) 4342-1101/0523
Fax: (54 11) 4345-3003
E-mail: cira@abaconet.com.ar

Camara De Comercio Exterior De Cordoba (Chamber of Foreign Trade of Cordoba)

Mr. Fulvio Pagane

President

Rosario De Santa Fe 231 4th Floor Of. 9

5000 Córdoba

Phone: (54 351) 421-4804

Fax: (54 351) 4243-8609

E-Mail: camcomext@si.sorcom.ar

Web Page: <http://www.cordoba.com.ar/ccec>

Union Industrial Argentina (Argentine Industry Association)

Mr. Osvaldo Rial, President

Av. Leandro N. Alem 1067, Pisos 10 y 11

1001 Buenos Aires

Phone: (54 11) 4313-2561/2611

Fax: (54 11) 4313-2413

E-mail: uia@oct.net.ar

Web Page: <http://uia.org.ar>

CONTACTS: BRAZIL

U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL TRADE ADMINISTRATION - THE U.S. & FOREIGN COMMERCIAL SERVICE

The U.S. Embassy and Consulates in Brazil are responsible for providing U.S. SME exporters with the full range of US&FCS assistance in researching, entering and expanding within Brazil.

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E-mail: lynn.wong@mail.doc.gov

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70403-900 - Brasilia, DF
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E-Mail: alexandre.wyllie@mail.doc.gov

Web Page: www.focusbrazil.org.br

STATE OF VIRGINIA RESOURCES IN BRAZIL

Virginia Economic Development Partnership

André Neufeld
International Trade Manager - South America
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BRAZILIAN GOVERNMENT

ANATEL-National Telecommunications Agency

Hernando Navajo Juarrero

President

Renato Guerreiro

Director-General

SAS Quadra 6, Bloco H, 3 andar

70313-900, Brasilia, DF

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Helio de Lima Leal

Head of the International Office

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Fax: (55 61) 312-2244

E-Mail: helioleal@anatel.gov.br

Marcos de Souza Oliveira

Certification Manager

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Phone: (55 61) 312-2233

Fax: (55 61) 312-2215

E-Mail: marcoss@anatel.gov.br

Web Page: <http://www.anatel.gov.br>

Ministério da Ciência e Tecnologia (Ministry of Science and Technology)

Mr. Ronaldo Mota Sardenberger

Minister

Esplanada dos Ministérios

Bloco E - 4º andar

70067-900, Brasília, DF

Phone: (55 61) 224-4364

Fax: (55 61) 225-7496

Web Page: <http://www.mct.gov.br>

Ministry of Communications

Joao Pimenta da Veiga Filho

Minister

Esplanada dos Ministerios

Bloco R, 8 andar

70044-900, Brasilia, DF

Phone: (55 61) 311-6201

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Secretaria de Serviços de Radiodifusão

Ronaldo Rangel de Albuquerque Sá

Director

Esplanada dos Ministérios, Bloco R

Sala 300 ala Oeste-Anexo

70044-900, Brasília, DF

Phone: (55 61) 311-6226

Fax: (55 61) 224-4749

LOCAL TRADE ASSOCIATIONS AND GOVERNMENT OFFICES

ABRANETRJ (Associação Brasileira de Provedores de Acesso, Serviços e Informações da Rede Internet - Rio De Janeiro)

Murillo Marques Junior

President

R. Visconde de Pirajá, 207

loja 216

22410-001, Ipanema - RJ

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E-Mail: murillo@abranetrj.org.br

ABTA - Associação Brasileira de TV pr Assinatura

Walter Longo

President

Avda Paulista 2.001, Cjs 314/315

01311-931, São Paulo, SP

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Associação Brasileira de Emissora de Radio e Televisão

Orlando José Zovico

President

Rua Bela Cintra 746, 15 andar

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Phone: (55 11) 258-0199

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ASSESPRO (Brazilian Association of Software and Informatic Service)

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Director, Partnering (ASSESPRO)
Rua do Mercado, 34 Cj. 901/1001
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CODIN (Rio de Janeiro Industrial Development Agency)

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FIESP/CIESP

(FIESP - State of São Paulo Federation of Industries)
(CIESP - State of São Paulo Confederation of Industries)

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FIRJAN (Rio de Janeiro Federation of Industries)

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RIOSoft

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SUCESU - (Association of Informatics and Telecom End-Users of São Paulo)

Joao Neves Fernandes
Executive Director
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Fax: (55 11) 822-8376
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U.S. TRADE ASSOCIATIONS IN BRAZIL

TEC-LA Telecommunications Industry Association (TIA)

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CONTACTS: UNITED STATES

U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL TRADE ADMINISTRATION - TRADE DEVELOPMENT

Office of Computers and Business Equipment (OCBE)

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Web Page: <http://exportIT.ita.doc.gov>

Office of Telecommunications (OT)

U.S. Department of Commerce
Room 4324
Washington D.C. 20230
Phone: (202) 482-4466
Fax: (202) 482-5834
Web Page: <http://telecom.ita.doc.gov>

U.S. DEPARTMENT OF COMMERCE, TECHNOLOGY ADMINISTRATION - NATIONAL CENTER FOR STANDARDS & CERTIFICATION INFORMATION (NCSCI)

National Institute of Standards and Technology (NIST)

Bldg 820, Room 164
Gaithersburg, MD 20899
Phone: (301) 975-4040/4038/4036/5155
WTO hotline: (301) 975-4041
Fax: (301) 975-2128
E-Mail: ncsci@nist.gov
Web Page: <http://ts.nist.gov/ts/htdocs/210/217/bro.htm>

STATE OF NEW JERSEY RESOURCES

New Jersey Institute of Technology

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STATE OF NORTH CAROLINA RESOURCES

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STATE OF VIRGINIA RESOURCES

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U.S. DEPARTMENT OF COMMERCE, ICT TEAM

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Web Page: http://www.usatrade.gov/US/annarbor/ICT_USA.htm

Contact Carmela for a list of domestic and foreign ICT Team members.

TRADE ASSOCIATIONS

Telecommunications Industry Association (TIA)

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Director, Latin American Programs

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Phone: (202)383-1493

Fax: (202)383-1495

E-Mail: jleuck@tia.eia.org

Web Page: www.tiaonline.org

RELEVANT AMERICAN CHAMBERS OF COMMERCE ABROAD

The U.S. Chamber of Commerce is the world's largest business federation, representing nearly three million companies, 3,000 state and local chambers, 850 business associations and 87 American Chambers of Commerce abroad. Among other goals, Chambers of Commerce abroad seek to promote bilateral trade, direct investment, technological transfer and other special items of mutual interest between foreign countries and the United States, and to supply U.S. business with placement services and information on trade opportunities and foreign economies.

American Chamber of Commerce in Argentina

Viamonte 1133, Piso 8
1001 Buenos Aires
Phone: (54 11) 4371-4500
Fax: (54 11) 4371-8400
E-Mail: amcham@amchamar.com.ar
Web Page: <http://www.amchamar.com.ar>

American Chamber of Commerce in Brazil, Rio de Janeiro

Praça Pio X, 15 / 5º andar - Centro
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Phone: (55 21) 203-2477
Fax: (55 21) 518-1564
E-Mail: internet@amchamrio.com.br
Web Page: <http://www.amchamrio.com.br>

American Chamber of Commerce in Brazil, São Paulo

Rua da Paz 1431
04713-001 - São Paulo - SP
Phone: (55 11) 5180-3804
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E-Mail: update@amcham.com.br
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American Chamber of Commerce in Brazil, Minas Gerais

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30130-140, Belo Horizonte, MG
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E-Mail: amchambr@embratel.net.br
Web Page: <http://www.amcham.com.br>

U.S. Chamber of Commerce Main Web page: <http://www.uschamber.com/>

SELECTED MAJOR IT- AND TELECOMMUNICATIONS-RELATED LATIN AMERICAN TRADE EVENTS

COMDEX/INFOCOM ARGENTINA (Trade Fair)

DESCRIPTION OF EVENT: The most important IT event in the region, each year COMDEX/INFOCOM Argentina attracts qualified, motivated IT professionals from Argentina and the countries of southern Latin America. A great opportunity to meet with high-level corporate and government decision makers who need your products and solutions.

DATE:	Held annually in May	
PLACE:	Buenos Aires, Argentina	
CONTACTS:	Ken McCoy	Silvia Yaber
	International Sales Manager	Commercial Specialist - IT and Telecommunications
	COMDEX	Embassy of the United States - Argentina
	Phone: (781) 433-1527	Adva. Colombia 4300
	Fax: (781) 433-2804	(1425) Buenos Aires-Argentina
	E-Mail: ken_mccoy@zd.com	Phone: (54 11) 4777-4533 ext. 2410
		Fax: (54 11) 4777-0673
		E-Mail: silvia.yaber@mail.doc.gov

Event Web Page: <http://www.zdevents.com/comdex/ international/2000/argentina.html>

EXPO COMM ARGENTINA (Trade Fair)

DESCRIPTION OF EVENT: EXPO COMM Argentina is one of the largest international telecommunications, wireless, and broadband exhibitions for Argentina and the other Spanish-speaking Mercosur countries.

DATE:	September 26-29, 2000
PLACE:	Buenos Aires, Argentina
CONTACT:	Silvia Yaber
	Commercial Specialist - IT and Telecommunications
	Embassy of the United States - Argentina
	Adva. Colombia 4300
	(1425) Buenos Aires-Argentina
	Phone: (54 11) 4777-4533 ext. 2410
	Fax: (54 11) 4777-0673
	E-Mail: silvia.yaber@mail.doc.gov

Event Web Page: <http://www.ejkrause.com/expocomm/latin/argentina.html>

COMDEX/SUCESU-SP BRAZIL 2000 (Trade Fair)

DESCRIPTION OF EVENT: COMDEX/SUCESU-SP 2000 Brazil is Latin America's leading information technology marketplace for resellers and corporate decision makers.

DATE: August 22-25, 2000 (Held annually in August)

PLACE: São Paulo, Brazil

CONTACTS: Ken McCoy	Lynn Wong
COMDEX	Commercial Specialist, E-Commerce & Internet Services
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Event Web Page: <http://www.zdevents.com/comdex/international/2000/brazil.html>

EXPO COMM WIRELESS BRAZIL 2000 (Trade Fair)

DESCRIPTION OF EVENT: EXPO COMM Wireless Brazil focuses on Brazil's telecommunications, wireless, networking and broadband markets. It will include exhibitors from more than 15 countries and attract an audience of 15,000 high-level wireless buyers.

DATE: August 29 - September 1, 2000 (Held annually)

PLACE: São Paulo, Brazil

CONTACT: Renata d'Almeida
Commercial Specialist, Telecommunications
Embassy of the United States -Brazil
Av. das Nações, Lote 03
70403-900 Brasilia, DF
Phone: (55 61) 321-7272 ext. 2171
Fax: (55 61) 225-3981
E-Mail: renata.d'almeida@mail.doc.gov

Event Web Page: <http://www.ejkrause.com/expocomm/latin/brazil.html>

TELELINK 2000 (Trade Fair)

DESCRIPTION OF EVENT: Established in a 25,000 square meter area at one of the most modern exhibition centers of South America, TELELINK 2000 attracts participants from telecom companies, Internet, multimedia, interactive media, programming, production, broadcast, pay TV and related services.

DATE: September 25-27, 2000
PLACE: São Paulo, Brazil
CONTACT: Renata d'Almeida
Commercial Specialist, Telecommunications
Embassy of the United States -Brazil
Av. das Nações, Lote 03
70403-900 Brasilia, DF
Phone: (55 61) 321-7272 ext. 2171
Fax: (55 61) 225-3981
E-Mail: renata.d'almeida@mail.doc.gov

Event Web Page: <http://www.telelinktradeshow.com.br>

TELEXPO 2001 (Trade Fair)

DESCRIPTION OF EVENT: Telexpo has become one of the most successful technology events in the Brazilian calendar, and is an excellent showcasing opportunity to launch new products and services into the telecommunications market. There are presentations on the latest technologies, trends, and expectations of the telecommunications sector.

DATE: March, 2001
PLACE: São Paulo, Brazil
CONTACT: Renata d'Almeida
Commercial Specialist, Telecommunications
Embassy of the United States -Brazil
Av. das Nações, Lote 03
70403-900 Brasilia, DF
Phone: (55 61) 321-7272 ext. 2171
Fax: (55 61) 225-3981
E-Mail: renata.d'almeida@mail.doc.gov

Event Web Page: <http://www.telexpo.com.br>

FURTHER INFORMATION ON TRADE AGREEMENTS

For further information on the Agreement on Basic Telecommunications Services contact:

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or see the OT web site at <http://telecom.ita.doc.gov>

For further information on the Information Technology Agreement contact:

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Fax: (202) 482-3002
E-Mail: danielle_kriz@ita.doc.gov
or see the OCBE web site at <http://exportIT.ita.doc.gov>

For further information on the MERCOSUR Agreement contact:

Alex Peacher
Desk Officer, Mercosur
Office of Latin America and the Caribbean
International Trade Administration
Room 3017
U.S. Department of Commerce
Washington, D.C., 20230
Phone: (202) 482-3872
E-Mail: alexander_peacher@ita.doc.gov

REFERENCES

ARGENTINA

BHS International, Inc., Telecom Approval Guidebook: South America, 1998.

“Country Profile: Argentina,” *LatinCom*, February 28, 2000.

“Internet Use, Investment to Rise as Telecoms Competition Heats up,” *LatinCom*, July 16, 1999, p. 10.

“No Need to Cry for VCs, Argentina,” *The Industry Standard*, December 13-20, 1999, p. 82.

“Well Placed to Lead the Latest Revolution,” (Financial Times Survey: Argentina), *The Financial Times*, December 15, 1999, p. IV.

BRAZIL

ANATEL, PASTE: Perspectives on the Expansion and Modernization of the Telecommunications Sector, April, 2000.

“AOL, Meet UOL,” *The Industry Standard*, February 14, 2000, p. 245.

“Brazil: On the Brink of an Internet Boom,” worldlyinvestor.com, January 17, 2000.

“Brazil on the Brink of Broadband Revolution,” *LatinCom*, September 10, 1999, p. 8.

“The Brazilian Market for E-Commerce and Internet Services,” U.S. Department of Commerce, U.S. and Foreign Commercial Service, São Paulo, Brazil, February 2000.

“Industry Sector Analysis: Software Market in Brazil,” U.S. Department of Commerce, U.S. and Foreign Commercial Service, Rio de Janeiro, Brazil, April 5, 2000.

“Panel: WAP Before Broadband for Mass Markets - Brazil,” *Business News Americas S.A.*, May 2, 2000.

“Sector Profile: Brazil,” *LatinCom*, December 17, 1999.

“Telcos, Cablers Poised to Join ISPs in Booming Cyber Market,” *LatinCom*, June 4, 1999, p. 6.

“Sector Profile: Brazil Internet,” *LatinCom*, June 4, 1999.

GENERAL

Americas Telecommunications Indicators 2000, International Telecommunications Union (ITU), April 2000.

“Are E-Commerce, Internet Projections Realistic?” *LatinCom*, September 24, 1999, p. 8.

Audits & Surveys Worldwide, Telecommunications in Latin America (New York: Audits & Surveys Worldwide, 1999).

Baskerville Communications Corporation, TV International: Cable Directory, 1996.

“Battle for the Latin American Net,” *Business Week*, November 1, 1999, p. 194.

CIT Publications Limited, The Datafile of Latin American Telecommunications, March, 1999.

“E-Business Washes into Latin America– Resellers Urged to Seize Web Opportunities,” www.techweb.com, December 13, 1999.

“Habla ISP?” *The Industry Standard*, July 23, 1999, www.thestandard.com.

ITU, Americas Telecommunications Indicators 2000, April 2000.

“Latin America Internet Services Market to Reach U.S. \$8.1 Billion by 2004,” International Data Corporation (IDC) Press Release, January 24, 2000.

“Latin America IT Services Market to Reach U.S. \$13.9 Billion by 2002,” IDC Press Release, February 11, 1999.

“Low PC Penetration, Low Credit Card Usage and Infrastructure Hinder Latin American Internet Markets,” Press Release, Jupiter Communications, February 15, 2000.

“Net Demands IT Services in Latin America,” www.techweb.com, February 21, 2000.

“Show Me the Dinero,” *The Industry Standard*, January 31, 2000, p.84.

United Nations, 2000 Demographic Yearbook.

United States Trade Representative (USTR), 2000 National Trade Estimate Report on Foreign Trade Barriers.

“Universally Slow in Latin America,” www.techweb.com, January 10, 2000.

World Bank, 2000 World Development Indicators.

World Trade Organization, Reference Paper, Negotiating Group on Basic Telecommunications.

World Trade Organization, WTO Agreement on Basic Telecommunications Services.

LIST OF CONTRIBUTORS

ARGENTINA

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PSINet
U.S. Department of Commerce, U.S. and Foreign Commercial Service
Velocom Argentina

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ANATEL
Arremate.com
ASSESPRO (Brazilian Association of Software and Informatic Service)
BCP Telecomunicações
Brazilian Telecommunications Association
CODIN (Rio de Janeiro Industrial Development Agency)
Cambridge Technology Partners
EMBRATEL/MCI
Federal APD International
FIESP/CIESP
 (FIESP - State of São Paulo Federation of Industries)
 (CIESP - State of São Paulo Confederation of Industries)
FIRJAN (Rio de Janeiro Federation of Industries)
Government of Brazil
Módulo Security Solutions
O Site
Pinheiro Neto Advogados
Qualcomm do Brasil
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